Reformatskiy's Reaction Involving Nitrobenzaldehydes SOV/20-123-1-25/56

formation of mixed organozinc compounds. A characteristic of the resulting products is presented in table 1. There are 1 table and 6 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley im. K.Ye.Voroshilova (Scientific Research Institute of Organic Semi-Products and Dyes imeni K. Ye. Voroshilov)

PRESENTED: May 23, 1958, by B.A.Kazanskiy, Academician

SUBMITTED: April 16, 1958

Card 3/3

VINOGRAD, L. Kh. Cand Chem Sci -- (diss) "Study in the field of the Reformatskiy reaction)." Mos, 1959. 8 pp (Min of Higher and Secondary Specialized Education RSFSR. Mos Order of Lenin Chemicotechnological Inst im D. I. Mendeleyev), 110 copies (KL, 49-59, 136)

AUTHORS: Vinograd, L. Kh., Vul'fson, N. S. SOV/79-29-1-52/74

TITLE: The Reaction According to Reformatskiy With α-Halogen Nitriles (Reaktsiya Reformatskogo s α-galoidonitrilami) II. Condensation of Chloro Benzaldehydes With Bromo-Aceto Nitrile (II. Kondensatsiya khlorbenzal'degidov s bromatseto-nitrilom)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 245 - 247 (USSR)

ABSTRACT: In the previous reports the authors described the condensation of benzaldehyde with bromo-aceto nitrile according to the reaction by Reformatskiy which proceeds under formation of β-oxy-β-phenyl propionitrile. In continuation of this work they investigated the condensation of the o-, m- and p-chloro benzaldehydes with bromo-aceto nitrile under the usual conditions of this reaction. In this connection they obtained as in the case of application of the non-substituted benzaldehyde the corresponding, previously not described β-oxy-β-chloro-phenyl propionitriles. The nitriles were characterized by the elementary analysis, by the transformation according to Radziszewski (Ref 2)

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The Reaction According to Reformatskiy With α-Halogen Nitriles. II. Condensation of Chloro Benzaldehydes With Bromo-Aceto Nitrile

SOV/79-29-1-52/74

into the also hitherto not described oxyamides and by saponification into the well-known trans-o-, m- and p-chloro-cinnamic acids: $ClC_6H_4CHO + BrCH_2CN \xrightarrow{Zn} ClC_6H_4CH(OH)CH_2CN$

$ClC_6H_4CH(OH)CH_2CONH_2$ $ClC_6H_4CH=CHCOOH$. It is worth mentioning that the introduction of the chlorine atom into position 4 of the benzaldehyde increases somewhat the yield in oxynitrile as compared to the non-substituted benzaldehyde (53.4 instead of 48.2%), whereas the introduction of chlorine into position 2, and especially 3 of benzaldehyde leads to a reduction (43.0 and 27%). In the presence of mercury chloride (Ref 3), however, the yield in β-oxy-β-(3-chloro-phenyl)propionitrile increases up to 50.7%. There are 7 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut poluproduktov i krasiteley (Scientific Research Institute of Intermediate Products and Dyes)

SUBMITTED: November 29, 1957

Card 2/2

5 (3)

AUTHORS: Vul'fson, N. S. Vinogra[illegible], L. Ph. SOV/[illegible]

TITLE: Reformatskiy's Reaction With α-Halogen Nitriles (Reaktsiya Reformatskogo s α-galoidnitrilami). III. Condensation of the Methoxy-benzaldehydes With Bromo-aceto Nitrile (III. Kondensatsiya metoksibenzal'degidov s bromatsetonitrilom)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1147-1149 (USSR)

ABSTRACT: The authors previously described the condensation of benzaldehyde and chloro-benzaldehydes with bromo-aceto nitrile (Refs 1, 2). Further, the condensation of bromo-aceto nitrile with o-, m-, p-methoxy- and 3,4-dimethoxy-benzaldehydes were investigated under the usual conditions of Reformatskiy's reaction. The β-(2-methoxy-phenyl)- and β-(3-methoxy-phenyl)-β-oxy-propionitriles, which so far have not yet been described, were accordingly obtained from o- and m-methoxy-benzaldehydes as well as with chlorobenzaldehydes and unsubstituted benzaldehyde. In the case of p-methoxy- and 3,4-dimethoxy-benzaldehydes the known nitriles of p-methoxy- and 3,4-dimethoxy-cinnamic acids were formed (Refs 3, 4).

Card 1/3 The β-(2-methoxy-phenyl)- and β-(3-methoxy-phenyl)-β-oxy-

propionitrile were transformed by hydrogenperoxide into the amides of β-(2-methoxy-phenyl)- and β-(3-methoxy-phenyl)-β-oxy-propionic acids, and by saponification into the 2- and 3-methoxy-cinnamic acids. The condensation of m-methoxy-benzaldehyde and m-chloro-benzaldehyde (Ref 2) was carried out in a lower yield than with the o- and p-isomers, while mercury chloride increased the yield only from 22.1 to 25.7 %. Very good yields were attained with tetrahydrofuran instead of the usual solvents (Ref 5). In this connection the yields for o-, m-, p-methoxy- and 3,4-dimethoxy-benzaldehydes were increased from 49.7 to 70.4 %, from 25.7 to 74 %, from 34.6 to 62 %, and from 23 to 76.3 %, accordingly. The reaction in tetrahydrofuran proceeded abruptly, thus shortening reaction time and decreasing resin formation. There are 10 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute of Organic Semi-products and Dyes)

Reformatskiy's Reaction With α-Halogen Nitriles.
III. Condensation of the Methoxy-benzaldehydes With Bromo-acetic Nitrile

SUBMITTED: March 19, 1958

Card 3/3

SOV/79-29-8-53/81

AUTHORS: Vinograd, L. Zh., Vul'fson, N. S.

TITLE: Reformatskiy's Reaction With α-Halogen Nitriles. IV. Condensation of Ketones With Bromoacetonitrile

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2690-2692 (USSR)

ABSTRACT: In previous papers (Ref 1), the reaction of bromoacetonitrile with different aromatic aldehydes was described which takes place according to Reformatskiy under usual conditions, and yields the β-oxynitriles. The authors carried on with the investigation of this reaction, and condensed ketones (acetophenone, cyclohexanone and dibutyl ketone) with bromoacetonitrile; the corresponding β-oxynitriles resulted. On distillation of β-oxy-β-phenylbutyronitrile, a partial dehydration takes place, and an impurity of the nitrile of the β-methyl-cinnamic acid is formed. The oxynitrile can be isolated from the higher-boiling fraction by crystallization. The pure, unsaturated nitrile was obtained by dehydration of the nitrile mixture with potassium bisulfate. The solvent used influences the course of reaction. In the case of the reaction of bromoacetonitrile with acetophenone, it was found that in benzene, toluene and in a mixture of benzene and ether mainly resinous products are formed; in dioxane, ether and their

Card 1/2

mixture the maximum yields are 38.5%; the best yields (67.8%) were obtained when using tetrahydrofuran (Table 1). The nitriles not described in publications, with the exception of 5-oxy-5-cyanomethylnonane, were converted into the corresponding amides and, besides, the nitrile of the β-methyl-cinnamic acid was converted into the β-methyl-cinnamic acid. Thus, the nitriles of the β-methyl-cinnamic-, β-oxy-β-phenyl-butyric-, and β-oxy-β-butyl-heptanic acid were synthesized. The results of the experiments are given in table 2, the characteristic features of the amides in table 3. There are 3 tables and 3 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute for Organic Semi-products and Dyes)

SUBMITTED: July 11, 1958

SOV/79-29-8-54/81

3(3)

AUTHORS: Vul'fson, N. S., Vinograd, L. Kh.

TITLE: Reformatskiy's Reaction With α-Halogen Nitriles. V. Reaction of Benzaldehyde and Acetophenone With Chloroaceto-, α-Bromopropio-, and α-Bromoisobutyro Nitriles

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2692-2695 (USSR)

ABSTRACT: The authors tried to extend Reformatskiy's reaction with bromoacetonitrile described previously (Ref 1) to other α-halogen nitriles: to chloroacetonitrile, α-bromopropionitrile, and α-bromoisobutyronitrile. All these nitriles were allowed to react with benzaldehyde and acetophenone. In analogy with the reactions of chloroacetate, the chloroacetonitrile reacts more difficultly than the corresponding bromide, as was expected, and gives smaller yields in β-oxynitriles. The α-methyl derivatives of bromoacetonitrile (α-bromopropionitrile and α-bromoisobutyronitrile) react more readily than bromoacetonitrile and give better yields than the corresponding β-oxynitriles. The nitriles were identified, as previously (Ref 1), by transformation into the corresponding β-oxyamides. Yet, not all nitriles reacted in this way. The reaction time of α-methyl- and α,α-dimethyl-β-oxy-β-phenylpropionitrile with H_2O_2 had to be prolonged to 3 hours, and that of

Card 1/2

Reformatskiy's Reaction With α-Halogen Nitriles. V. SOV/79-29-8-54/8
Reaction of Benzaldehyde and Acetophenone With Chloroaceto-, α-Bromopropio-, and α-Bromoisobutyro Nitriles

α-methyl- and α,α-dimethyl-β-oxy-β-phenylbutyronitrile to 6 hours. Only the first three nitriles gave the corresponding amides in small yields. In the case of α,α-dimethyl-β-oxy-β-phenylbutyronitrile, even a splitting-up of the carbon chain takes place, and acetophenone is formed again. On hydrolysis of nitriles (boiling with KOH for 12-15 hours) surprisingly no cinnamic acids resulted. This can be explained by the influence exerted by the α-substituents upon the stability of the carbon chain. The experimental results are given in two tables. There are 2 tables and 11 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute for Organic Semi-products and Dyes)

SUBMITTED: July 11, 1958

Card 2/2

VINOGRAD, L.Kh.; SMIRNOV, [illegible]; CHALENKO, L.T.

Fluorine-containing 4-phenylazo-1,2-naphthoquinones. Zhur. prikl. khim. 38 no.1:208-211 Ja '65.

(MIRA 18:3)

1. Rubezhanskiy filial Nauchno-issledovatel'skogo instituta organicheskikh poluproduktov i krasiteley.

KURCHENINOVA, N.K.; VINOGRAD, L.Kh.; SALOVA, R.A.

Effect of the moisture content of aluminum oxide on the sharpness of separation in chromatography. Zav. lab. 30 no.9:1076 '64.
(MIRA 18:3)

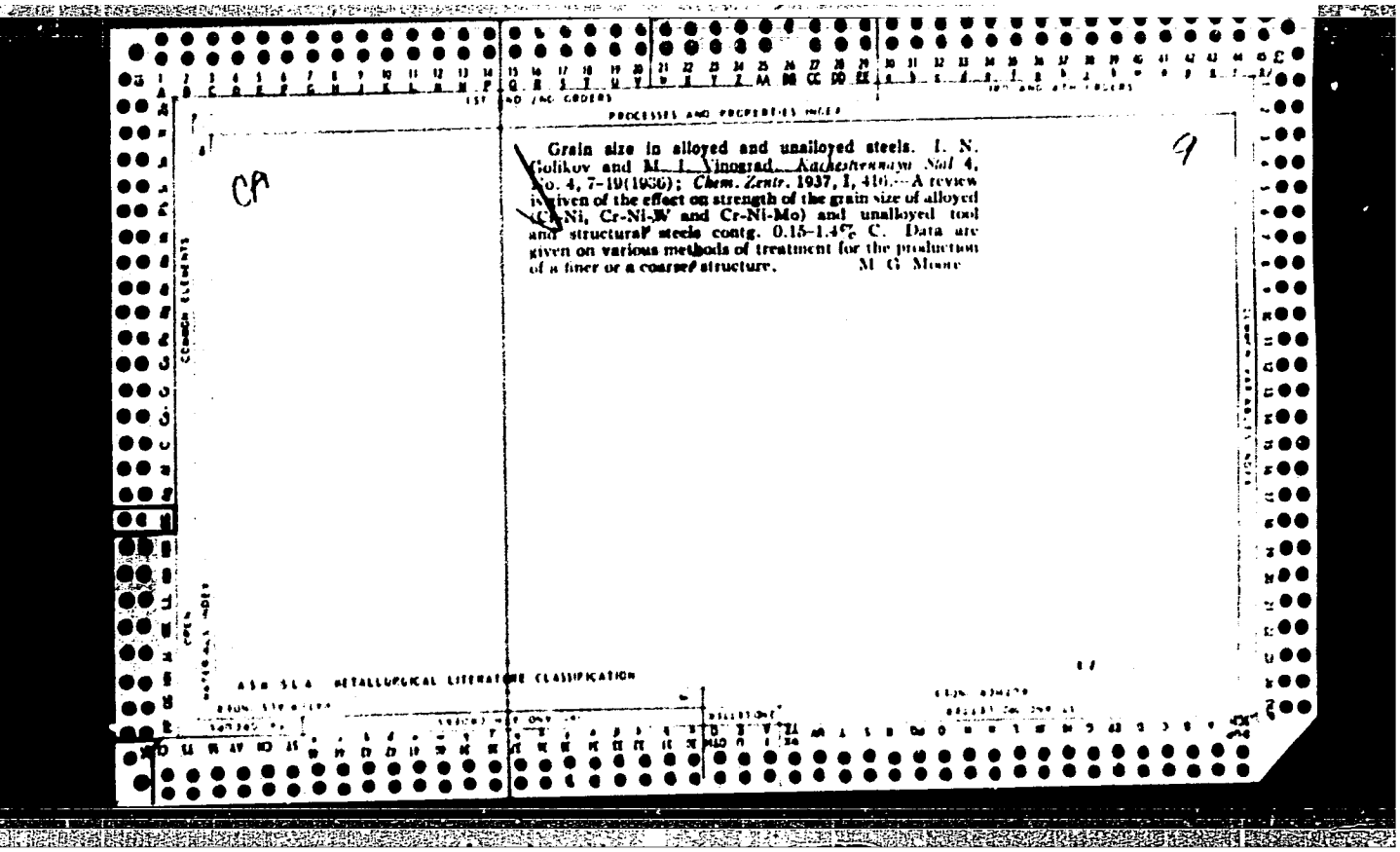
1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.

VINOGRAD, M.I.; GROMOVA, G.P.; Prinimali uchastiye: LIKHNOVA, I.V.; SMIRNOV, Yu.I.; RASKOVA, A.F.; PROSHKINA, M.F.

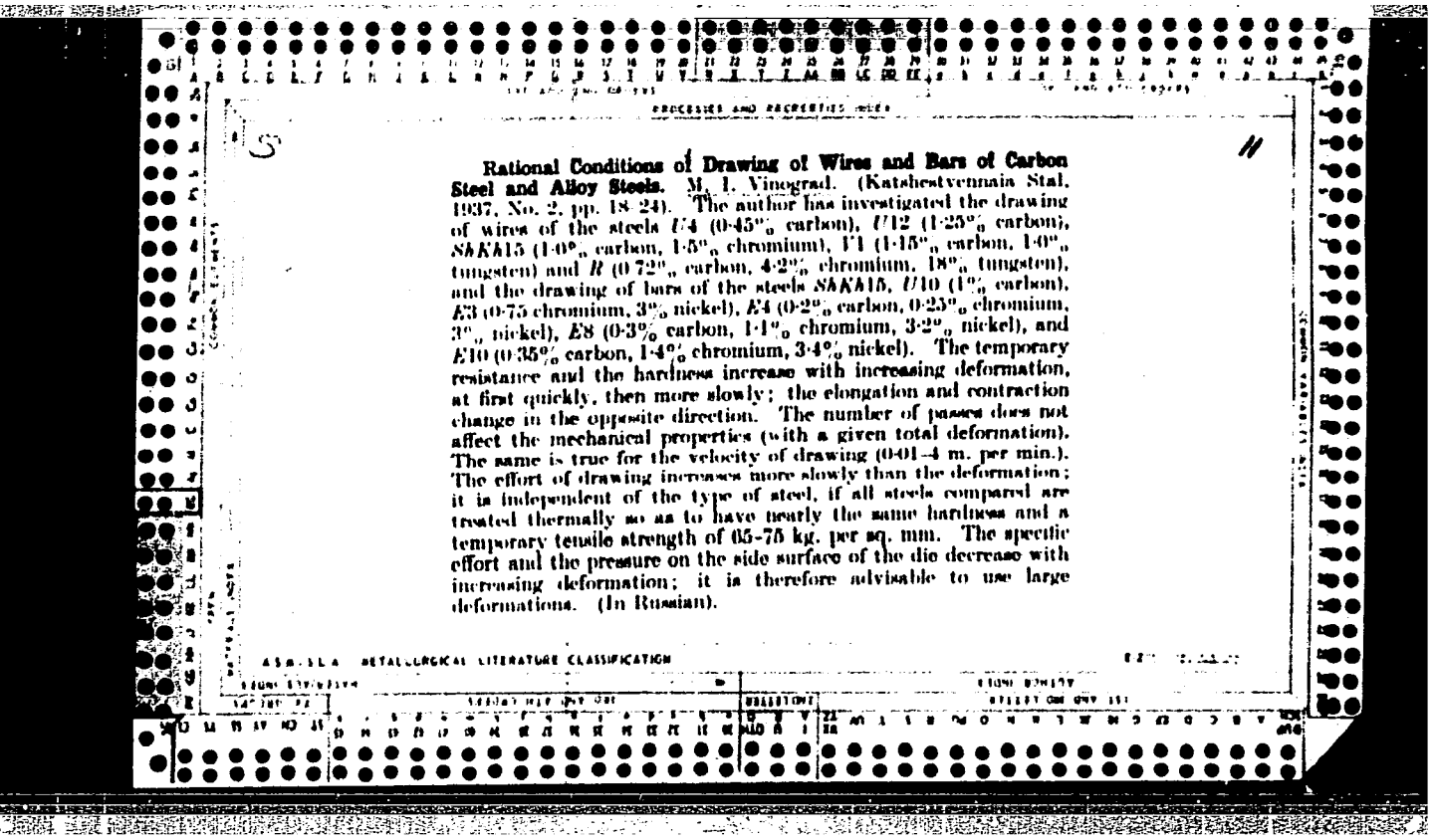
Investigating inclusions in U10A steel with a varying degree of plasticity. Stal' 22 no.9:842-845 S '62. (MIRA 15:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

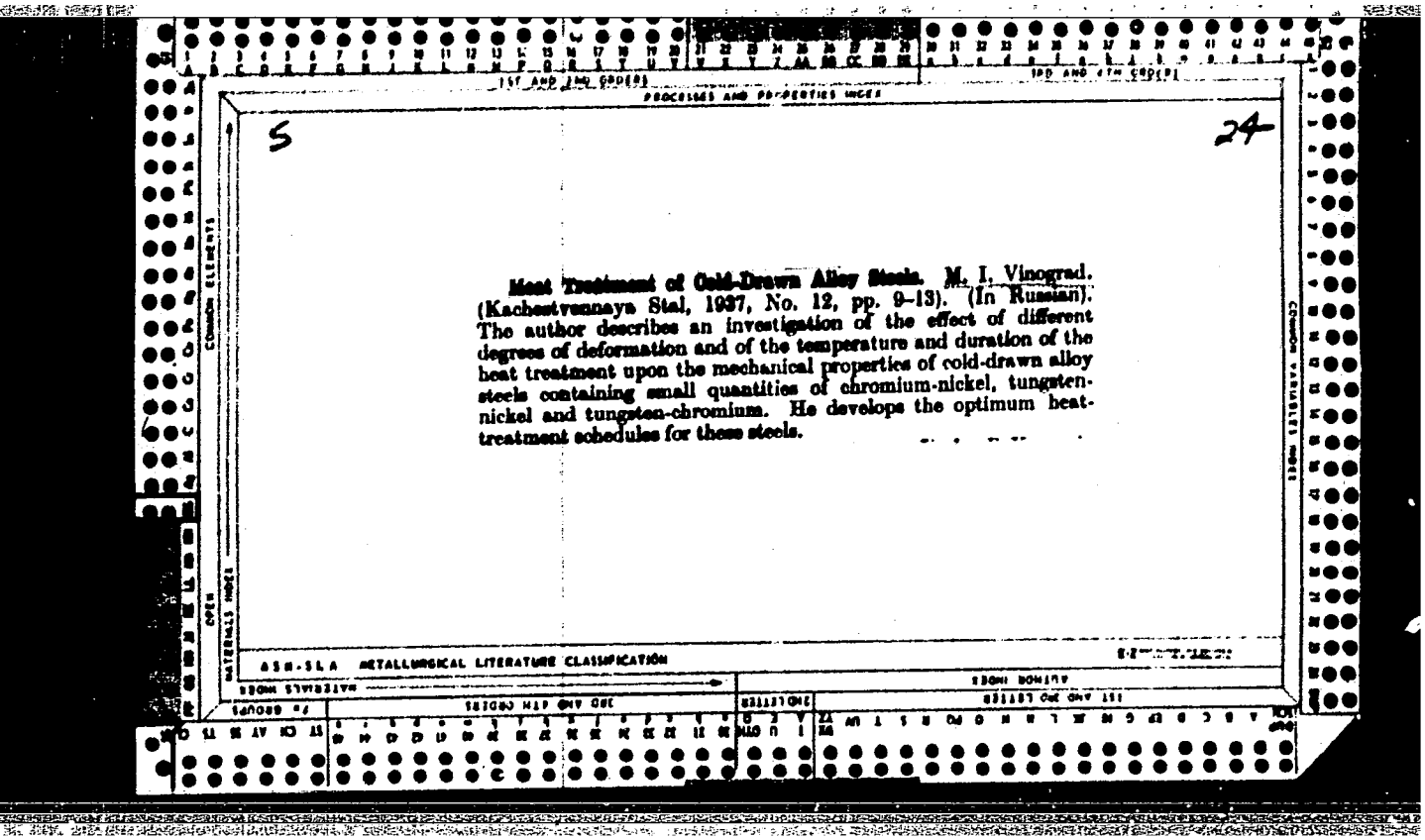
(Steel--Impurities)
(Metals at high temperature)



Grain size in alloyed and unalloyed steels. I. N. Golikov and M. I. Vinograd. *Kachestvennaya Stal* 4, No. 4, 7–19(1936); *Chem. Zentr.* 1937, I, 410.—A review is given of the effect on strength of the grain size of alloyed (Cr-Ni, Cr-Ni-W and Cr-Ni-Mo) and unalloyed tool and structural steels contg. 0.15–1.4% C. Data are given on various methods of treatment for the production of a finer or a coarser structure. M. G. Moore



Rational Conditions of Drawing of Wires and Bars of Carbon Steel and Alloy Steels. M. I. Vinograd. (Katshestvennaia Stal, 1937, No. 2, pp. 18–24). The author has investigated the drawing of wires of the steels *U4* (0·45% carbon), *U12* (1·25% carbon), *SAKA15* (1·0% carbon, 1·5% chromium), *V1* (1·15% carbon, 1·0% tungsten) and *R* (0·72% carbon, 4·2% chromium, 18% tungsten), and the drawing of bars of the steels *SAKA15*, *U10* (1% carbon), *E3* (0·75 chromium, 3% nickel), *E4* (0·2% carbon, 0·25% chromium, 3% nickel), *E8* (0·3% carbon, 1·1% chromium, 3·2% nickel), and *E10* (0·35% carbon, 1·4% chromium, 3·4% nickel). The temporary resistance and the hardness increase with increasing deformation, at first quickly, then more slowly; the elongation and contraction change in the opposite direction. The number of passes does not affect the mechanical properties (with a given total deformation). The same is true for the velocity of drawing (0·01–4 m. per min.). The effort of drawing increases more slowly than the deformation; it is independent of the type of steel, if all steels compared are treated thermally so as to have nearly the same hardness and a temporary tensile strength of 65–75 kg. per sq. mm. The specific effort and the pressure on the side surface of the die decrease with increasing deformation; it is therefore advisable to use large deformations. (In Russian).

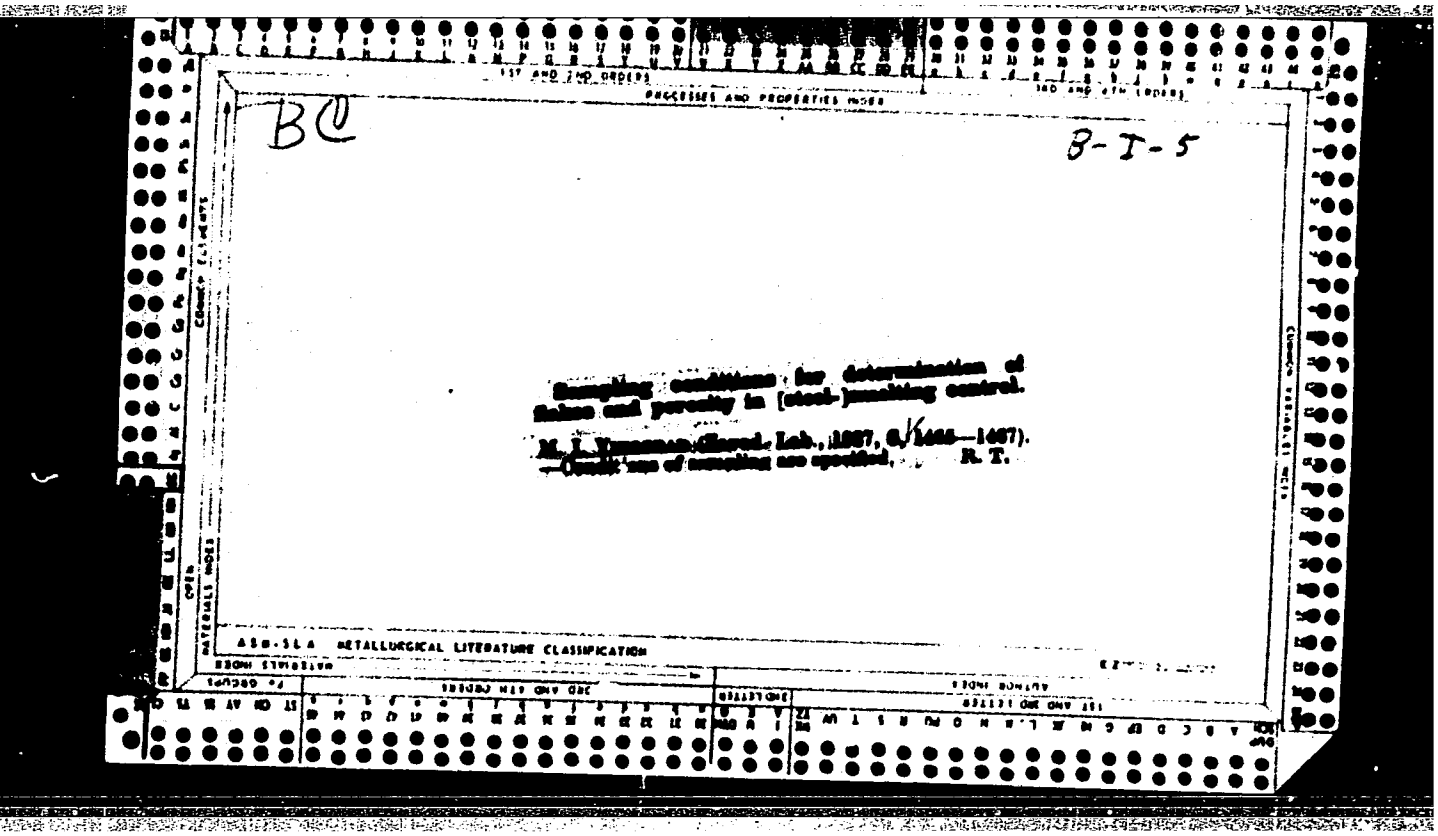


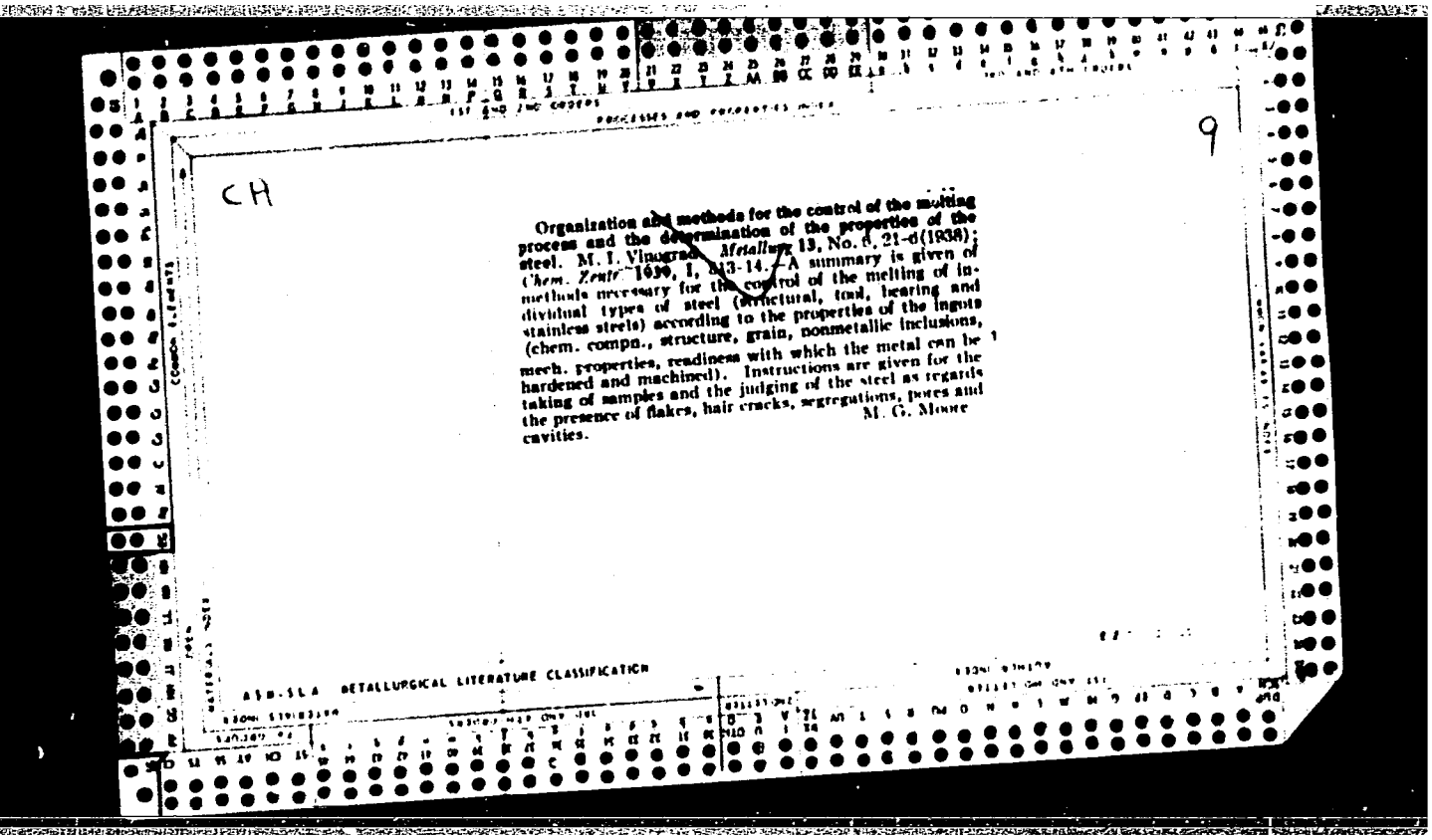
S

24

Heat Treatment of Cold-Drawn Alloy Steels. M. I. Vinograd. (Kachestvennaya Stal, 1937, No. 12, pp. 9–13). (In Russian). The author describes an investigation of the effect of different degrees of deformation and of the temperature and duration of the heat treatment upon the mechanical properties of cold-drawn alloy steels containing small quantities of chromium-nickel, tungsten-nickel and tungsten-chromium. He develops the optimum heat-treatment schedules for these steels.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





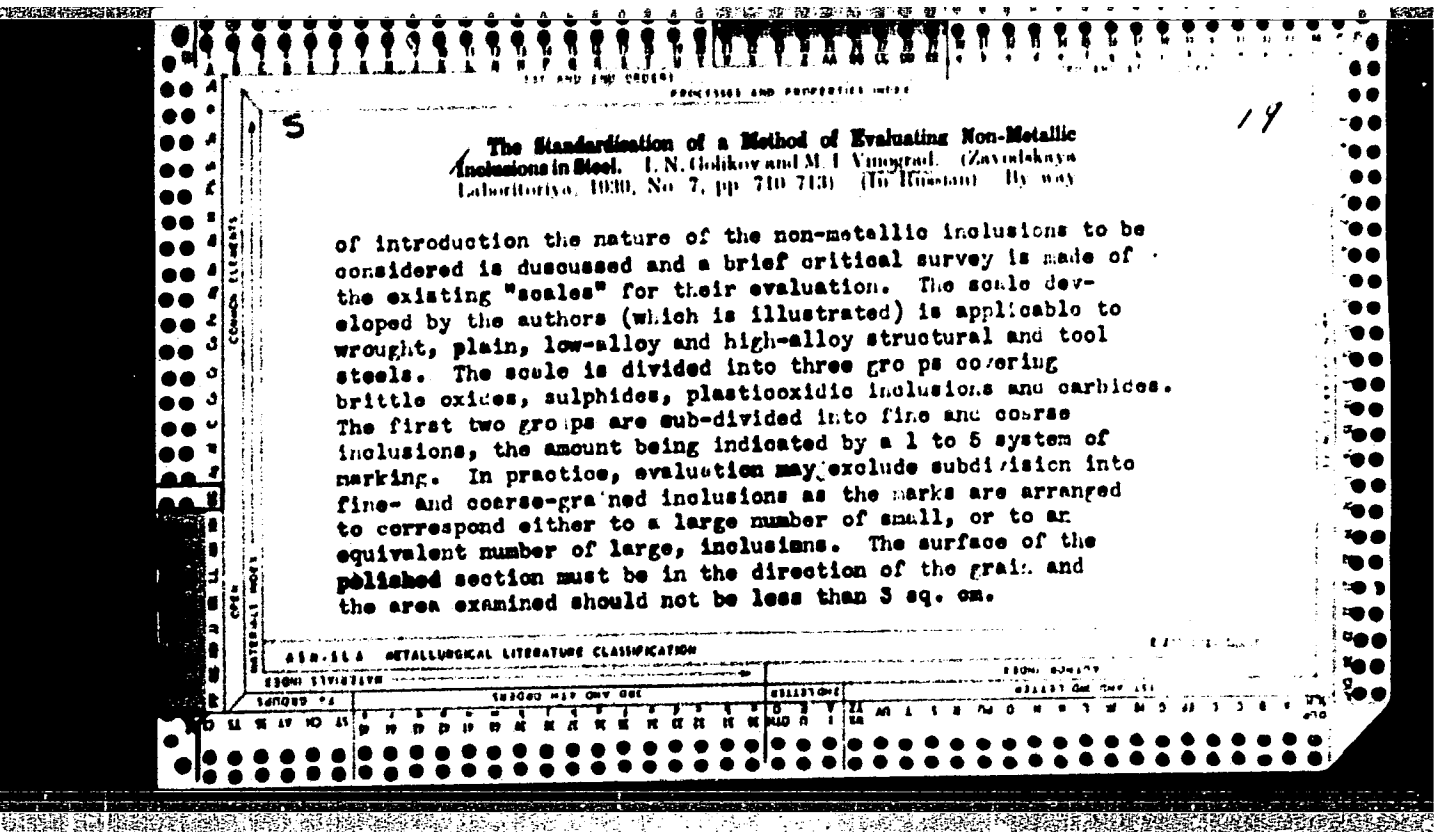
CH

9

Organization and methods for the control of the melting process and the determination of the properties of the steel. M. I. Vinograd. *Metallurg* 13, No. 6, 21-6(1938); *Chem. Zentr.* 1939, I, 313-14.—A summary is given of methods necessary for the control of the melting of individual types of steel (structural, tool, bearing and stainless steels) according to the properties of the ingots (chem. compn., structure, grain, nonmetallic inclusions, mech. properties, readiness with which the metal can be hardened and machined). Instructions are given for the taking of samples and the judging of the steel as regards the presence of flakes, hair cracks, segregations, pores and cavities.

M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

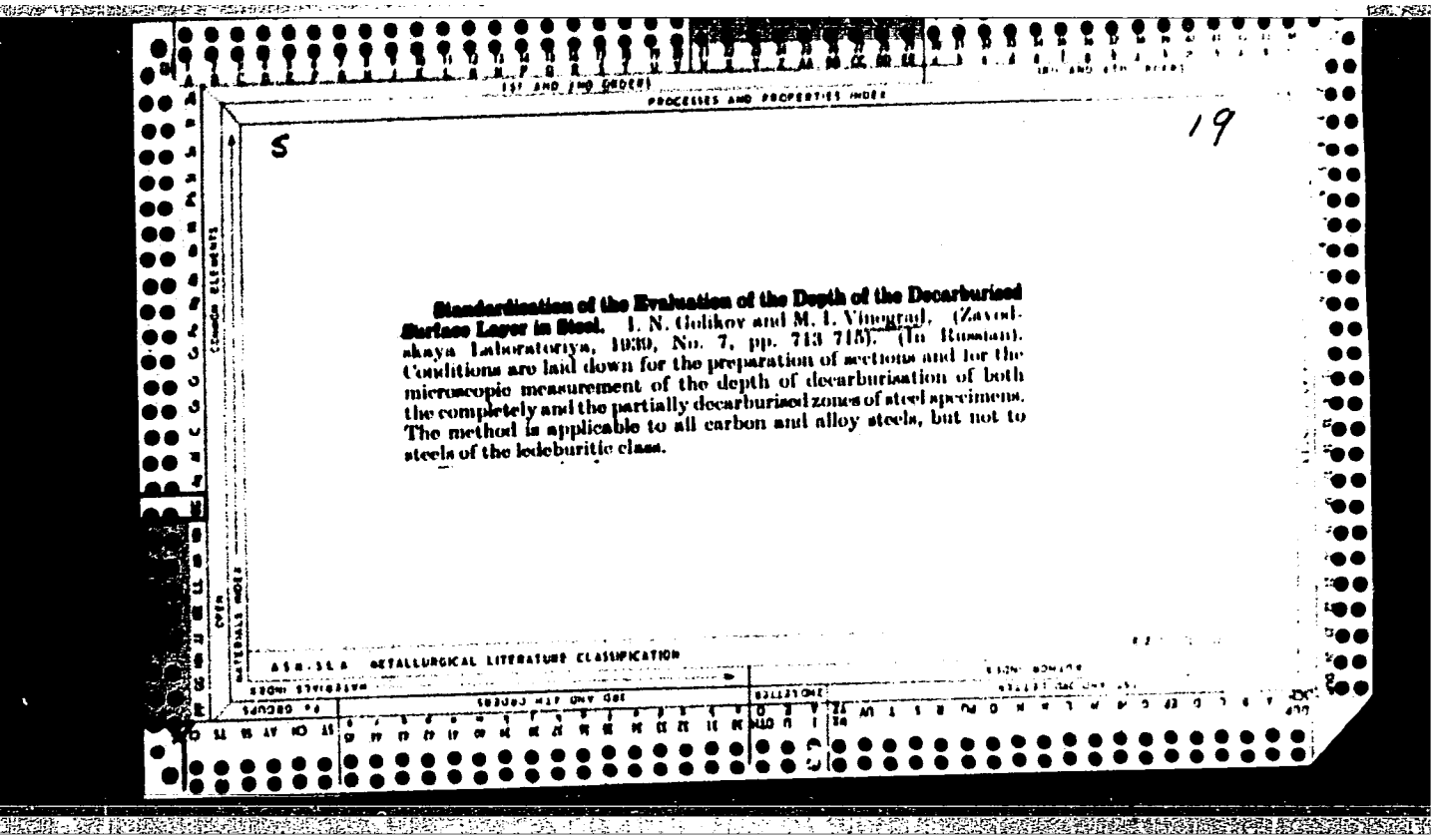


S

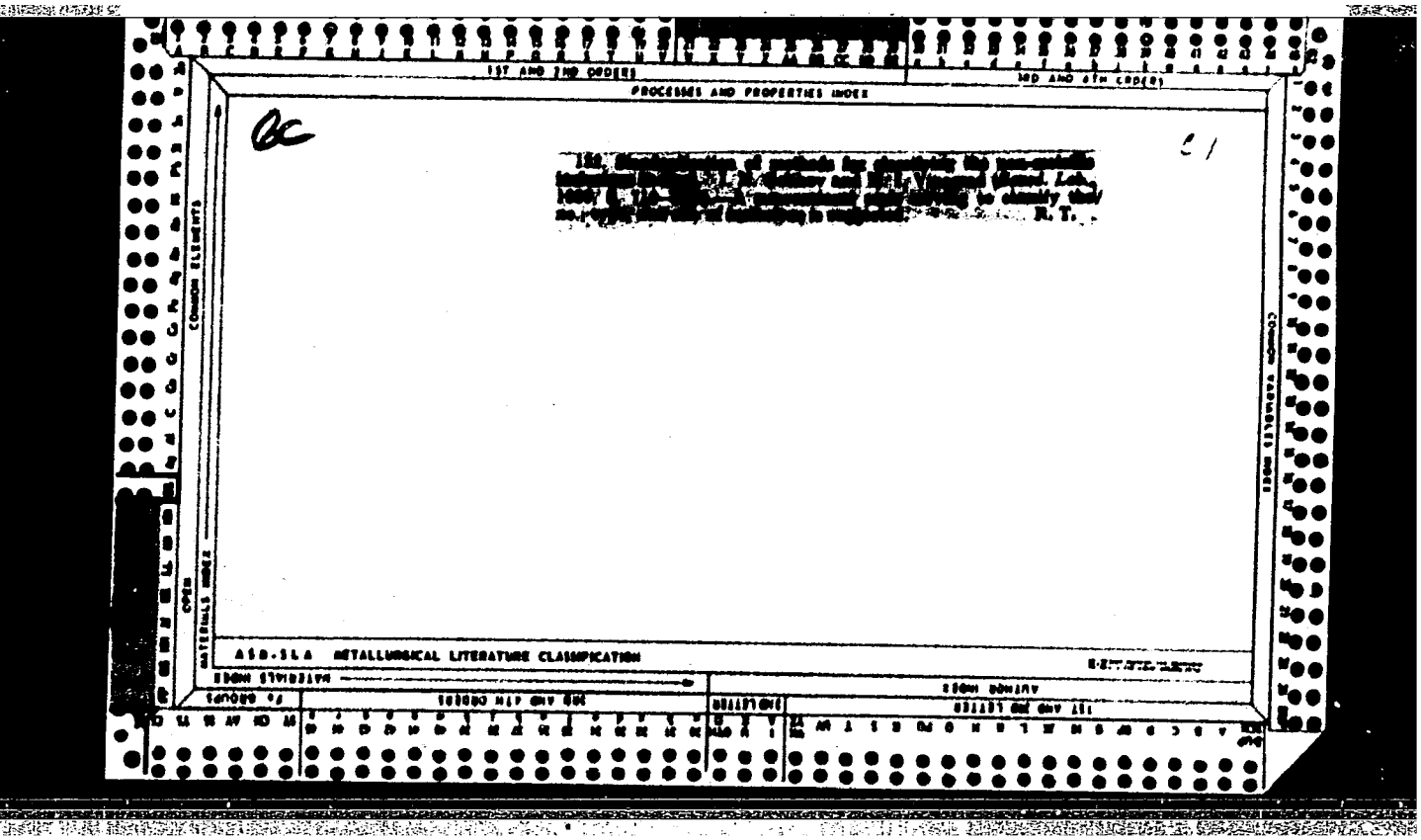
14

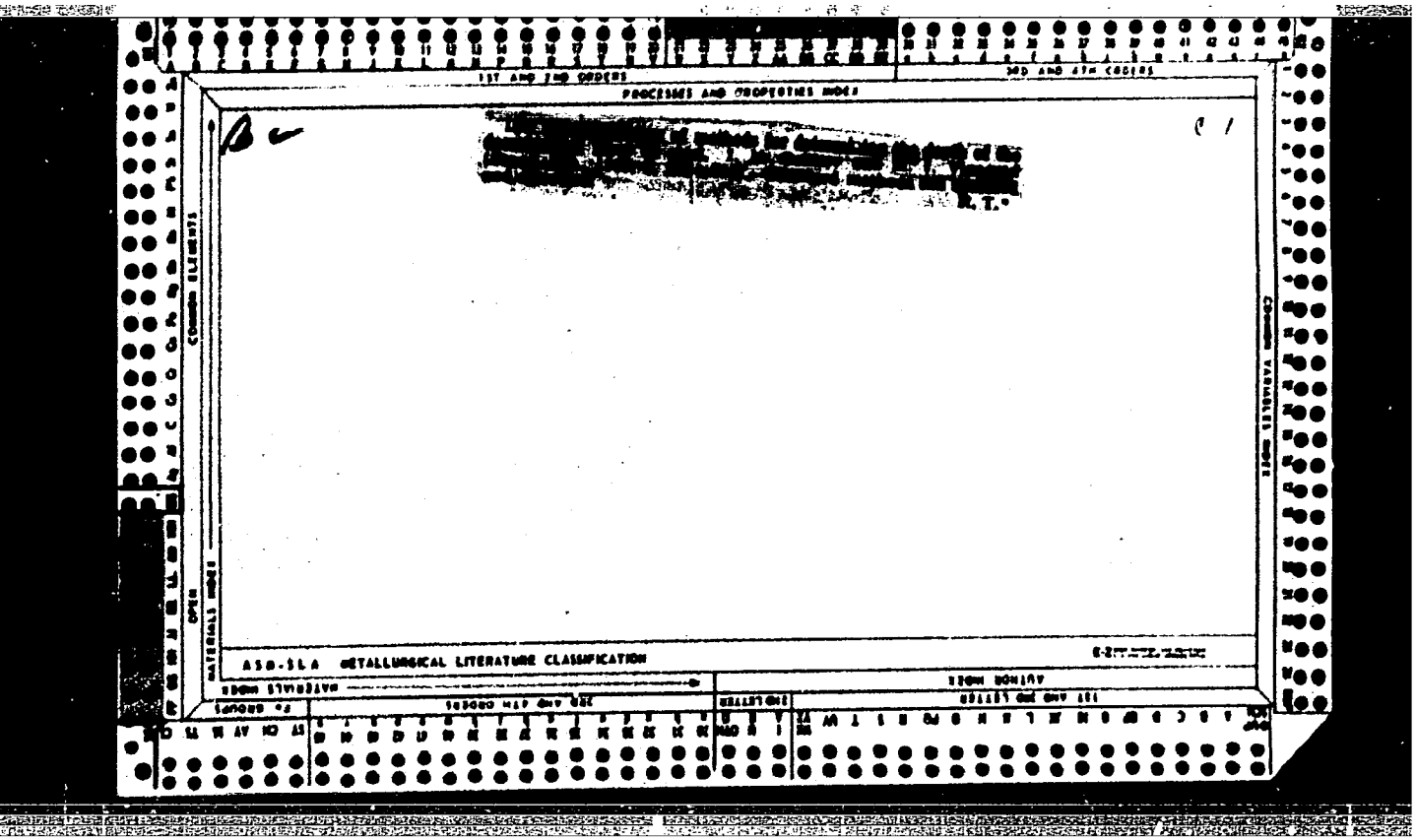
The Standardization of a Method of Evaluating Non-Metallic Inclusions in Steel. I. N. Golikov and M. I. Vinogrud. (Zavodskaya Laboratoriya, 1930, No. 7, pp. 710-713) (In Russian) By way

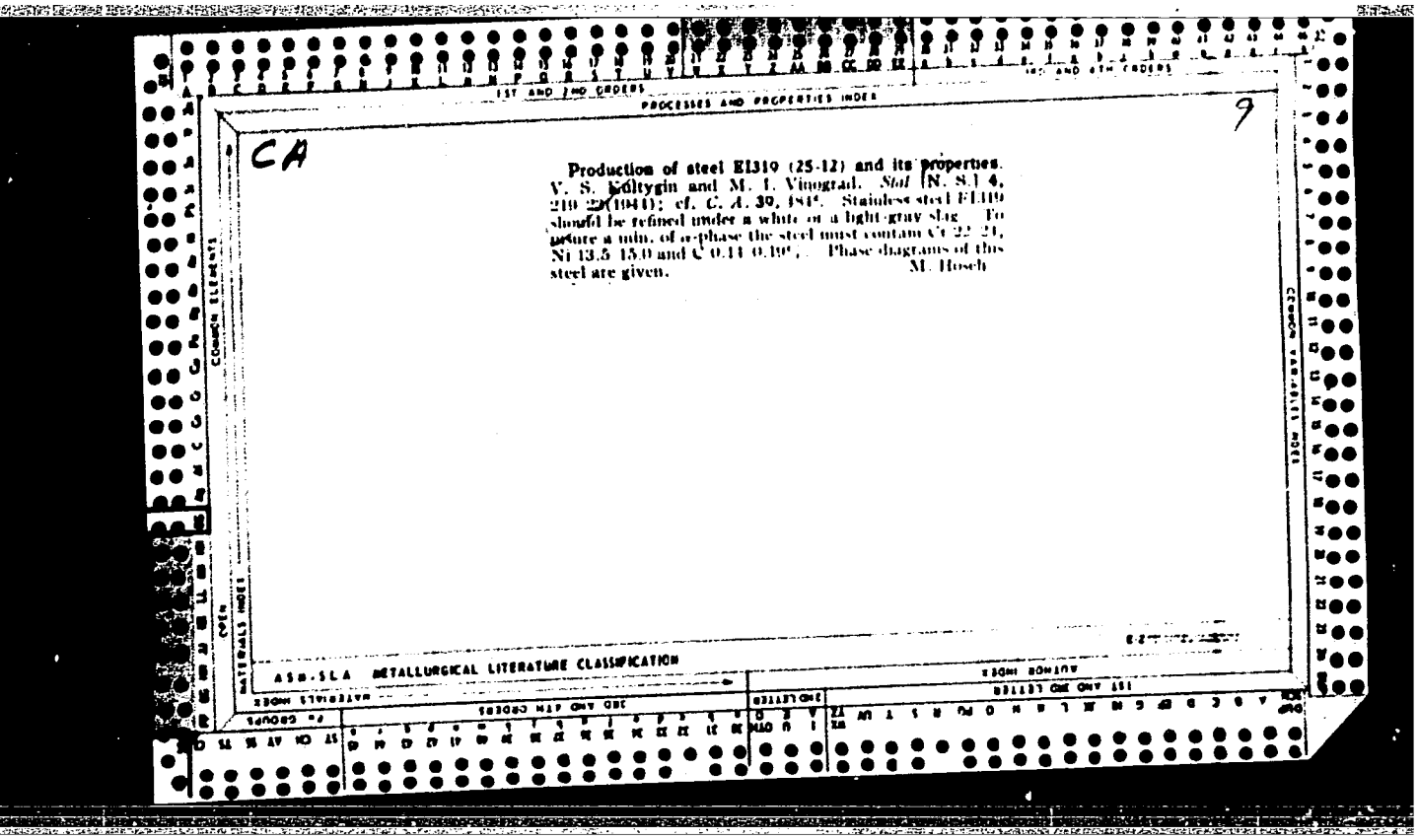
of introduction the nature of the non-metallic inclusions to be considered is dusoussed and a brief critical survey is made of the existing "scales" for their evaluation. The scale developed by the authors (which is illustrated) is applicable to wrought, plain, low-alloy and high-alloy structural and tool steels. The scale is divided into three gro ps co/ering brittle oxides, sulphides, plasticoxidic inclusions and carbides. The first two gro ps are sub-divided into fine and coarse inclusions, the amount being indicated by a 1 to 5 system of marking. In practice, evaluation may exclude subdi/ision into fine- and coarse-gra ned inclusions as the marks are arranged to correspond either to a large number of small, or to an equivalent number of large, inclusions. The surface of the polished section must be in the direction of the grai.. and the area examined should not be less than 3 sq. cm.



Standardization of the Evaluation of the Depth of the Decarburized Surface Layer in Steel. I. N. Golikov and M. I. Vinograd. (Zavodskaya Laboratoriya, 1939, No. 7, pp. 713-715). (In Russian). Conditions are laid down for the preparation of sections and for the microscopic measurement of the depth of decarburisation of both the completely and the partially decarburised zones of steel specimens. The method is applicable to all carbon and alloy steels, but not to steels of the ledeburitic class.





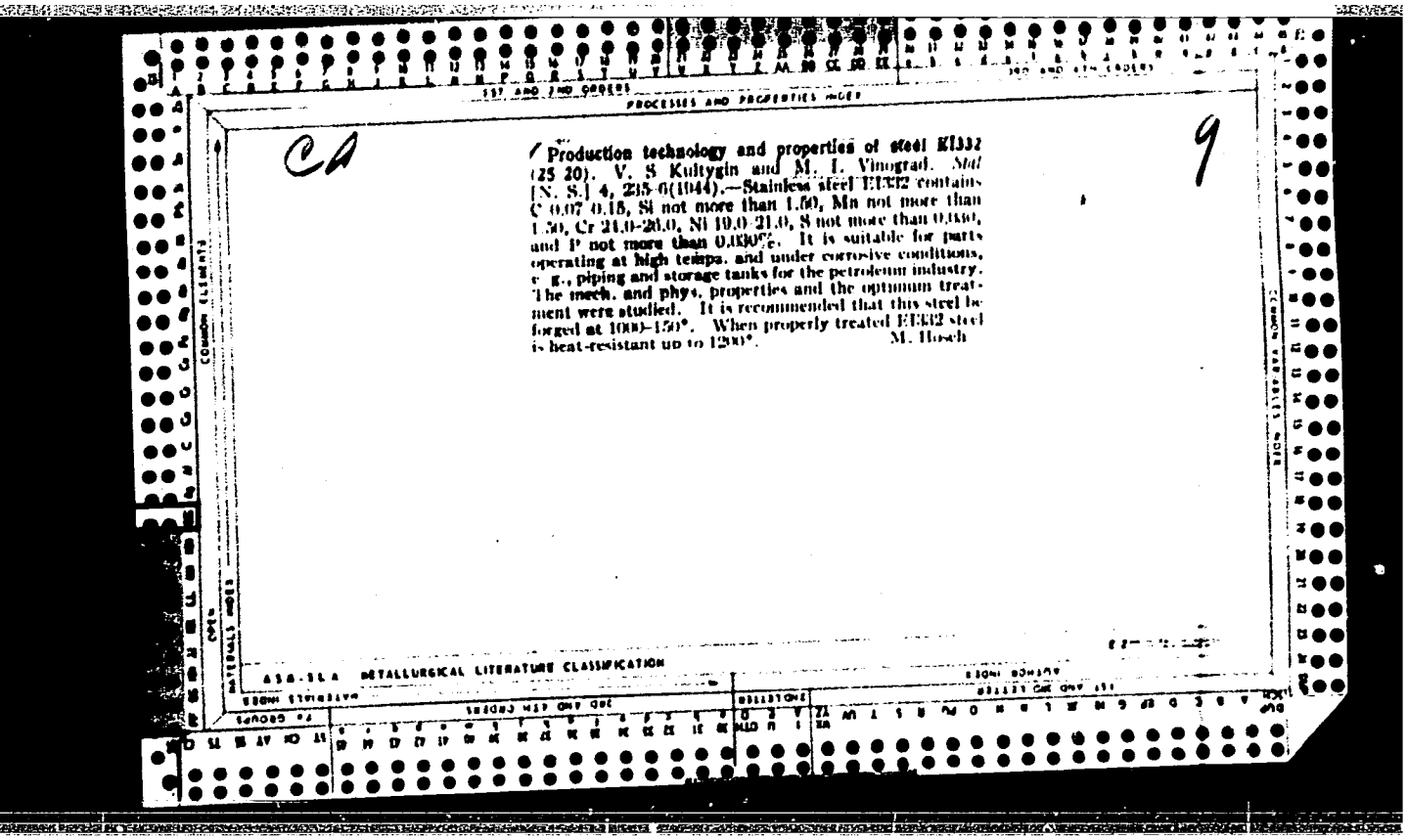


CA

9

Production of steel EI310 (25-12) and its properties. V. S. Kaltygin and M. I. Vinograd. *Stal* [N. S.] 4, 219-29(1941); cf. *C. A.* 30, 181⁴. Stainless steel EI310 should be refined under a white or a light-gray slag. To secure a min. of α-phase the steel must contain Cr 22-24, Ni 13.5-15.0 and C 0.11-0.19%. Phase diagrams of this steel are given. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

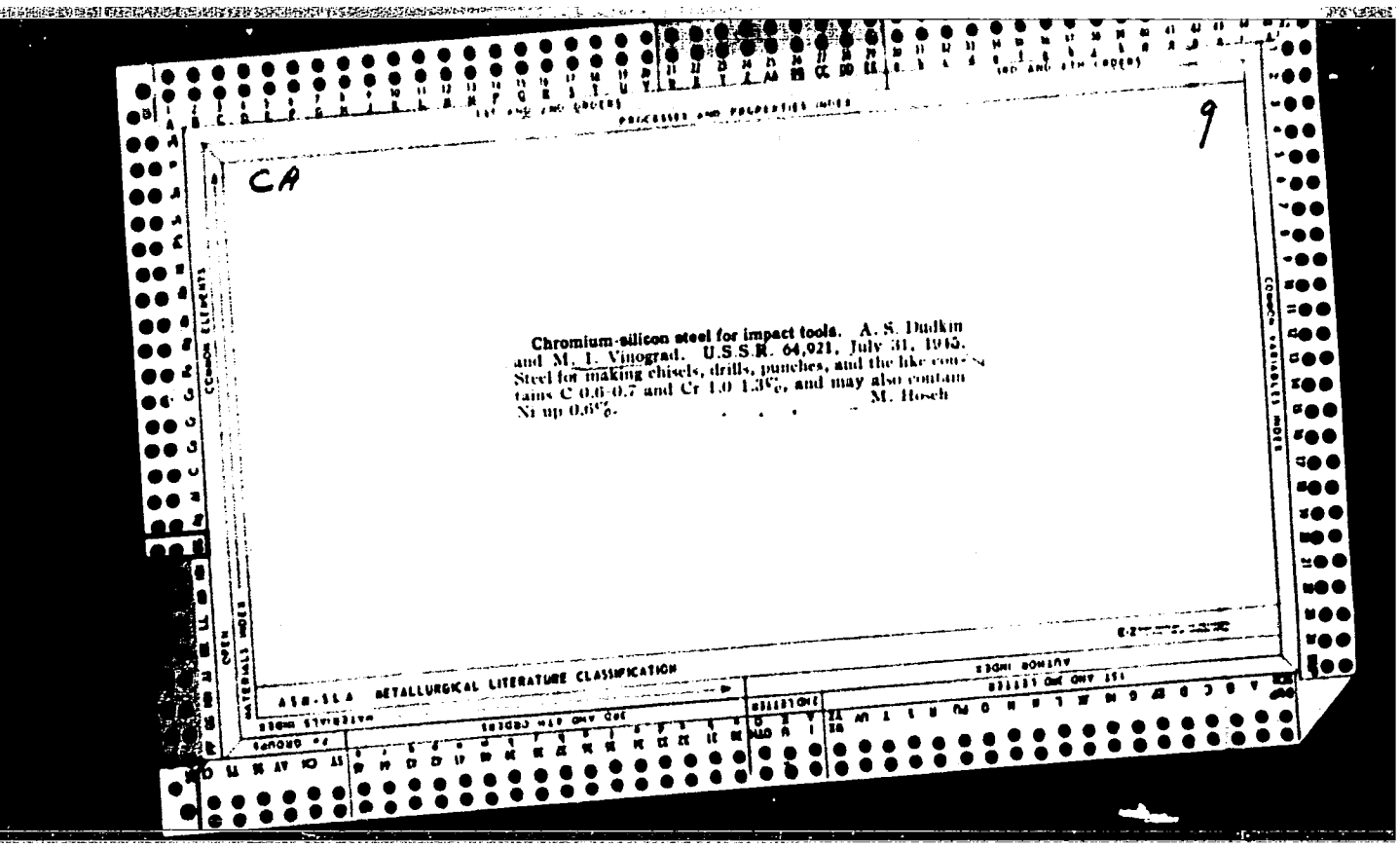


CA

9

Production technology and properties of steel EI332 (25 20). V. S Kultygin and M. I. Vinograd. *Stal* [N. S.] 4, 235-6(1944).—Stainless steel EI332 contains C 0.07-0.15, Si not more than 1.00, Mn not more than 1.50, Cr 24.0-26.0, Ni 19.0-21.0, S not more than 0.030, and P not more than 0.030%. It is suitable for parts operating at high temps. and under corrosive conditions, e. g., piping and storage tanks for the petroleum industry. The mech. and phys. properties and the optimum treatment were studied. It is recommended that this steel be forged at 1000-1150°. When properly treated EI332 steel is heat-resistant up to 1200°. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



VINOGRAD, M. I. and KULTYGIN, V. S.

"Black Fractures in Silicon-Tungsten Spring Steel fn 289," Stal', No.6, pp. 31-35, 1946

Evaluation B-60429

VINOGRAD, M. I.

Jul 48

USSR/Metals
Steel
Steel - Specifications

"The Formation of Micropores in EShKh15 Steel and Methods for Preventing Their Occurrence," M. I. Vinograd, Engr, Electrostal' Factory, 2½ pp

"Stal'" No 7 - p. 625-27

Formation of micropores in EShKh15 steel is not due to shrinkage, and porosity of metal or tears formed during rolling, as previously thought. It is caused by way slides are prepared. Prolonged annealing at 800-820° for 15-25 hours, mild quenching, rapid

6/49T83

Jul 48

USSR/Metals (Contd)

tempering, and polishing with abrasives which do not form scratches prevent appearance of micropores. Therefore, micropores should not be considered when assessing qualities of a steel. Gives microphotographs.

6/49T83

VINOGRAD, M. I.

IA 6/49T87

USSR/Metals | Aug 48
Steel, Chromium
Steel, Heat Treatment

"Heat Treatment of EZh1-2 Steel," M. I. Vinograd, Engr; M. T. Romashev, ElektroStal', $6\frac{1}{4}$ pp

"Stal'" No 8

EZh1-2 are chromium stainless steels used for turbine blading, etc. Mechanical properties:

	kg/mm^2	kg/mm^2	%	%	kgm/cm^2	
EZh1	63	45	20	60	8	180
EZh2	70	50	18	60	7	200

USSR/Metals (Contd 1) | Aug 48

Chemical composition:

Type	Smelting	C	Si	Mn	S
EZh1	C25581	0.10	0.35	0.33	0.017
EZh1	C27827	0.15	0.25	0.38	0.018
EZh2	C25449	0.20	0.27	0.33	0.012

Type	Smelting	P	Cr	Ni
EZh1	C25581	0.020	13.75	0.18
EZh1	C27827	0.023	13.90	0.15
EZh2	C25449	0.022	13.30	0.20

Optimum normalization temperature is 1,000-1,100°. Lack of oil baths is usually followed by air blast

[redacted] 6/49T87

USSR/Metals (Contd 2) | Aug 48

quenching, which reduces resilience. Describes secondary heat treatment to correct reduced resilience. Gives graphs and microphotographs.

[redacted] 6/49T87

CA

9

Stainless steels of the type 18-8 with titanium, columbium, and molybdenum. M. I. Yanovskii. *Stal'* **8**, 611 [in Russian] (1938). The making, mech. properties, and workability of this group of stainless steel are discussed.
M. Hoseh

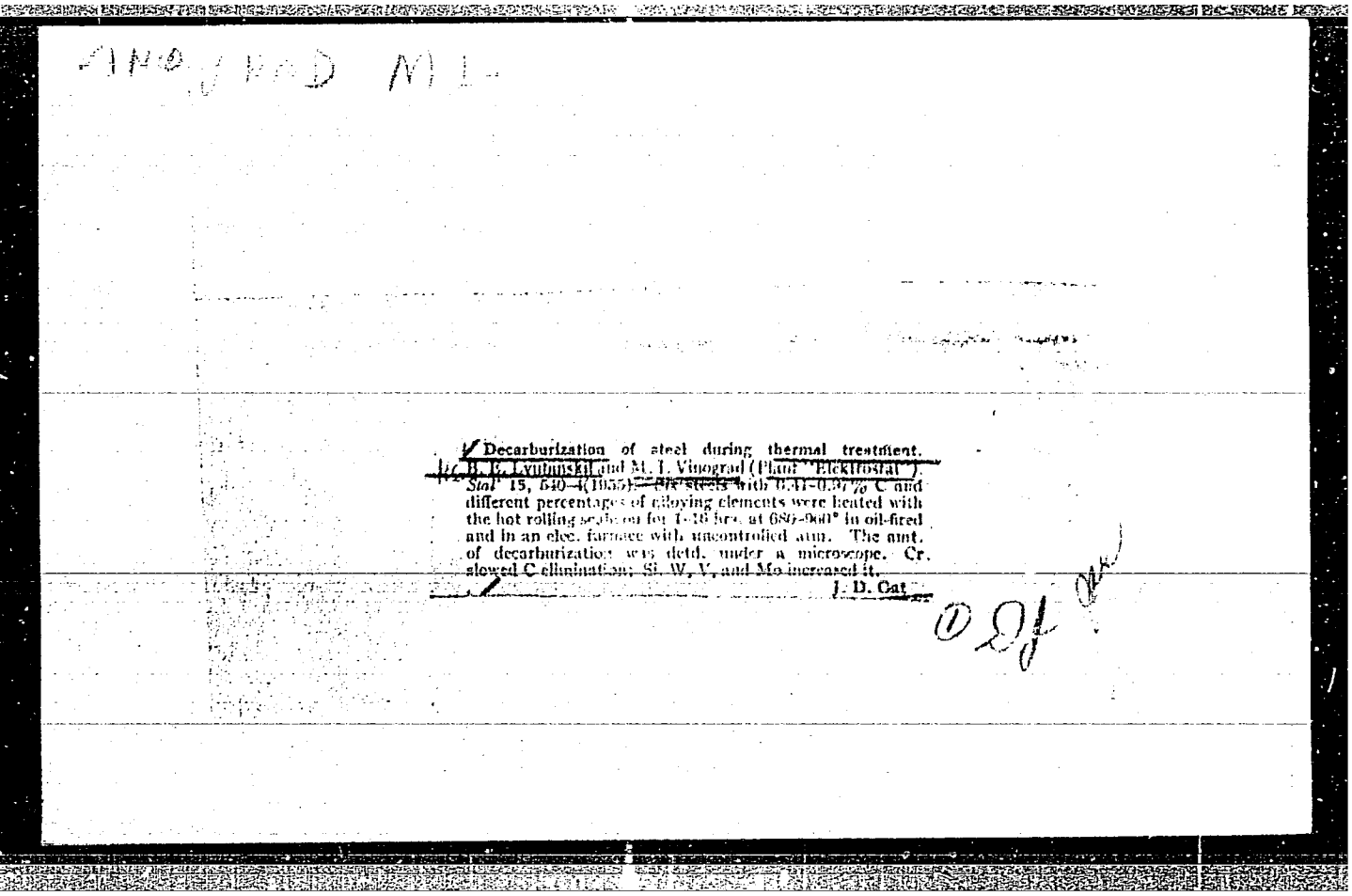
VINOGRAD, M.I.

ZUYEV, M.I.; KULTYGIN, V.S.; VINOGRAD, M.I.; OSTAPENKO, A.V.; LYUBINSKAYA, M.A.; DZUGUTOV, M.Ya.; SLAVKIN, V.S., redaktor; GOLYATKINA, A.G., redaktor; EVENSON, I.M., tekhnicheskiy redaktor.

[Plasticity of steel at high temperatures] Plastichnost' stali pri vysokikh temperaturakh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 100 p. (MLRA 8:3)
(Steel--Metallography)

VINOGRAD, M.I., kandidat tekhnicheskikh nauk; BOYARSHINOV, V.A., redaktor; MILLER, A.I., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor.

[Nonmetallic impurities in steel used in roller bearings.] Nemetallicheskie vkliucheniia v sharikopodshipnikovoi stali. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi metallurgii, 1954. 123 p. (MLRA 8:3)
(Roller bearings) (Steel--Metallography)



Decarburization of steel during thermal treatment. [illegible] B. G. Lyubimskii and M. I. Vinograd (Plant "Elektrostal"). *Stal'* 15, 540–4 (1955). Steels with 0.31–0.37% C and different percentages of alloying elements were heated with the hot rolling scale on for 1–16 hrs. at 680–960° in oil-fired and in an elec. furnace with uncontrolled atm. The amt. of decarburization was detd. under a microscope. Cr. slowed C elimination; Si, W, V, and Mo increased it.

J. D. Cat

SMIRNOVA, A.V.; KRASONOVA, A.K.; GROMOVA, G.P.; VINOGRAD, M.I.

Electron microscope study of fractures in the EI437B cast alloy. Zav. lab. 30 no.5:571-573 '64. (MIRA 17:5)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P. Bardina.

L 7036-65 EWT(m)/EWP(q)/EWP(t) Pad AFWL/ASD(a)-3/SSD/RAEM(t) MJW/JD/HW/JG

ACCESSION NR: AP4035088 S/0032/64/000/005/0571/0573

AUTHORS: Smirnova, A. V.; Krasnova, A. K.; Gromova, G. P.; Vinograd, M. I.

TITLE: Electron microscopic investigation of cracks in cast alloy EI437B

SOURCE: Zavodskaya laboratoriya, no. 5, 1964, 571-573

TOPIC TAGS: EI437B cast alloy, KhN77TYuR alloy, phase structure, fractography, surface property, metal grain structure

ABSTRACT: The method used by the authors permits simultaneous study of relief on fractures and the phase composition of particles disposed on the fracture surface. This method, furnishing a single-stage carbon print or film, was described in a previous paper by A. V. Smirnova and G. A. Kokorin (Zavodskaya laboratoriya, XXIV, 12, 1446, 1957). The prints were separated from the cracks by an electrolytic solution of a layer of metal in 10% solution of nitric acid in methyl alcohol, at low current density. This permitted relatively large pieces of the film to be removed, carrying with them segregated particles of the different phases. To remove the particles themselves, the film was washed in 10% H_2SO_4, which dissolved the oxide film as well. The surface structure of the cracks was studied with no additional etching. Samples were broken by the blow of a hammer at room temperature

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L 7036-65

ACCESSION NR: AP4035088

(and also at 1250C) and placed immediately in a vacuum device for plating with the carbon film. For comparison the surface was then etched and studied again. It was found that segregations of chromium boride accumulated at crystal boundaries, especially between dendrite axes. Particles of γ' -phase, $Ni_3(Ti,Al)$ were much less common at the crystal boundaries. Small centers of fracturing were observed about the finely disseminated γ' -phase, and large, greatly extended edges were found in places where single or grouped inclusions of the boride phase were found, or where nonmetallic inclusions were present. Where the primary foci of fracturing were small, the lines of deformation were more nearly rectilinear than where the primary foci were coarse. The nature of the fracturing depends on the nature, size, number, and distribution of excess phases in the alloy. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina (Central Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 004 OTHER: 000

Card 2/2

L 10150-67 EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6022509 SOURCE CODE: UR/0133/66/000/004/0355/0358

AUTHORS: Vinograd, M. I.; Gnuchev, S. M.; Gromova, G. P.; Smirnova, A. V.; Ryl'nikova, A. G.; Osnovin, V. A.; Krasnova, A. K.; Likhnova, I. V.; Yegorshina, T. V.

ORG: none

TITLE: Nonmetallic inclusions in melts of steel 08Kh20N10G6 exhibiting different hot technological plasticity

SOURCE: Stal', no. 4, 1966, 355-358

TOPIC TAGS: alloy steel, metallurgic research, aluminum, cerium / 08Kh20N10G6 alloy steel

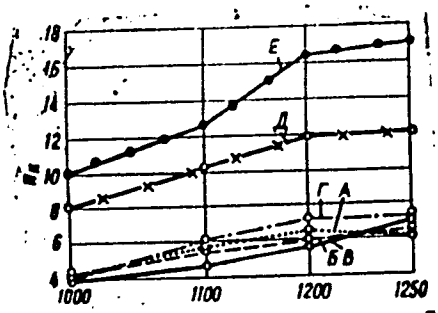
ABSTRACT: The effect of aluminum and rare earth elements (mainly cerium) on the technological plasticity of steel 08Kh20N10G6 was investigated. The investigation supplements the results of V. A. Osnovin and S. M. Gnuchev (Byulleten' TsIINChM, 1964, No. 6). The microstructure and twisting strength of the specimens was determined as a function of the temperature and nature of the reducing agent (see Fig. 1). It was found that addition of 1.5--2.0 kg/ton of Al and rare earth metals (0.15--2.0% on the basis of Ce) to steel 08Kh20N10G6 leads to a considerable increase in the high temperature plasticity of the latter. S. B. Lebedeva, I. A. Prokof'yeva, and L. I. Volkova participated in the experimental work.

UDC: 669.15:658.562

Card 1/2

L 10450-67

ACC NR: AP6022509



Experimental temperature, C.

Fig. 1. Results of torsion tests at high temperatures (n_k - number of revolutions at which failure occurred) of different melts A - E. Specimen A reduced in the usual way. All others reduced as described above.

Orig. art. has: 1 graph and 6 photographs.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 009

VINOGRAD, M.I.

Methods of quantitative determination of the contamination of deformed metal by macroinclusions (seams). Sbor. trud. TSNIICHM no.38:5-15 '64. (MIRA 18:3)

VINOGRAD, M.I.; GLUKHOVA, G.P.; CHIRKOVA, A.V.; [illegible]

Investigating the causes of reduced plasticity of the [illegible] alloy at high temperatures. Sbor. trud. TSNIICHM no.38:[illegible] (MIRA 18:2)
'64.

VINOGRAD, M.I.; GROMOVA, G.P.; YEGORSHINA, T.V.

Using X-ray microspectroscopy to investigate the composition of nonmetallic inclusions. Sbor. trud. TSNIICHM no.38:112-114 '64. (MIRA 18:3)

PHASE I BOOK EXPLOITATION SOV/6457

Vinograd, Mariya Ippolitovna

Vklyucheniya v stali i yeye svoystva (Inclusions in Steel and Its Properties) Moscow, Metallurgizdat, 1963. 252 p. 2950 copies printed.

Ed.: A. I. Lebedev; Ed. of Publishing House: A. L. Ozeretskaya; Tech. Ed.: Ye. B. Vaynshteyn.

PURPOSE: This book is intended for scientific and engineering personnel of the metallurgical and machine-building industries. It may also be useful to students at metallurgical schools of higher education.

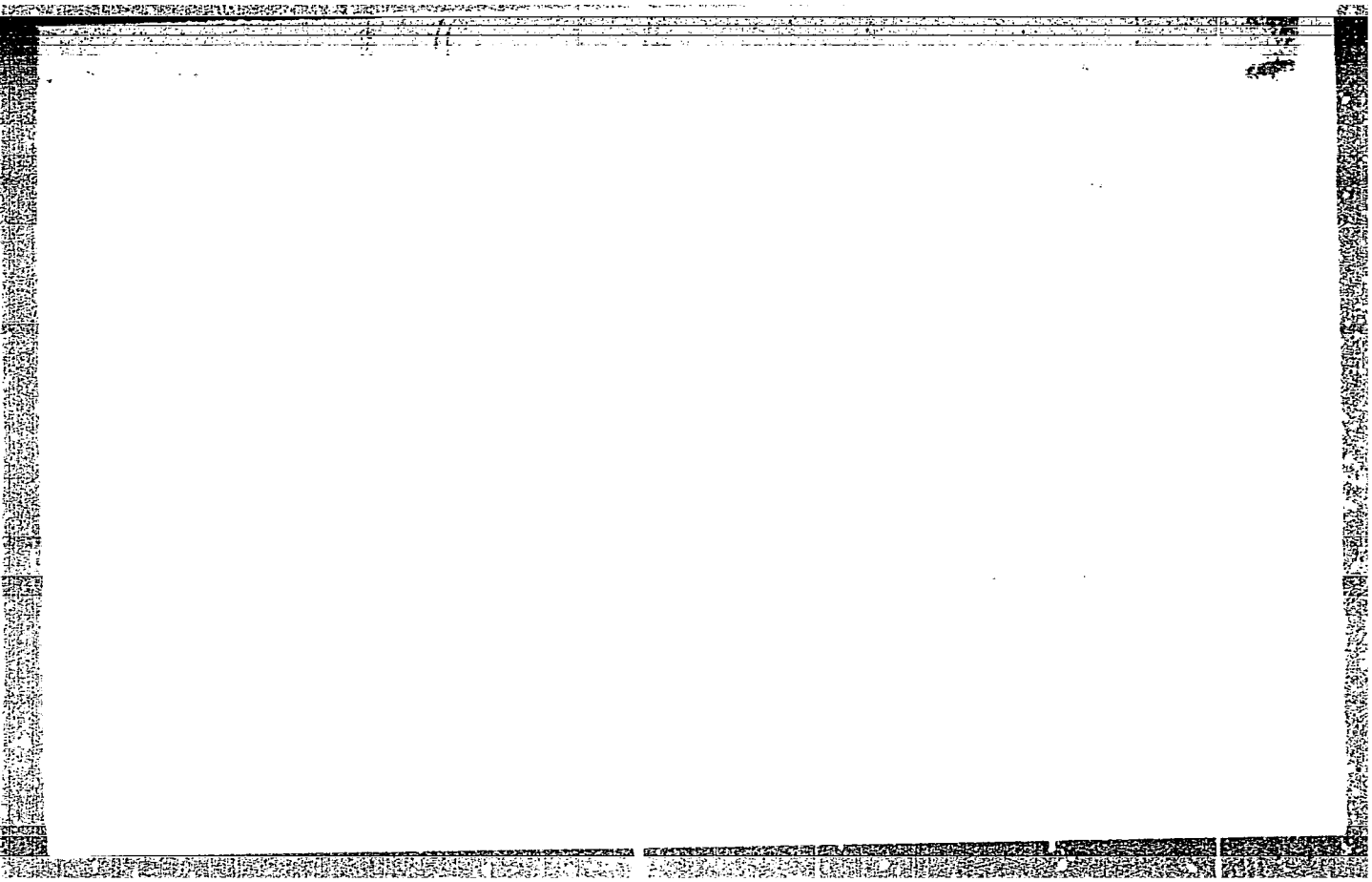
COVERAGE: The book presents data on nonmetallic inclusions in steel, analyzes the effect of inclusions on the properties of steel, and defines the general laws which govern this effect. Data concerning the effect of various elements of the production process on the composition and type of inclusions in carbon steel, low-alloy steel, and high-alloy steel are presented, and measures taken to reduce the content of nonmetallic inclusions are discussed. The author thanks

Card 1/5

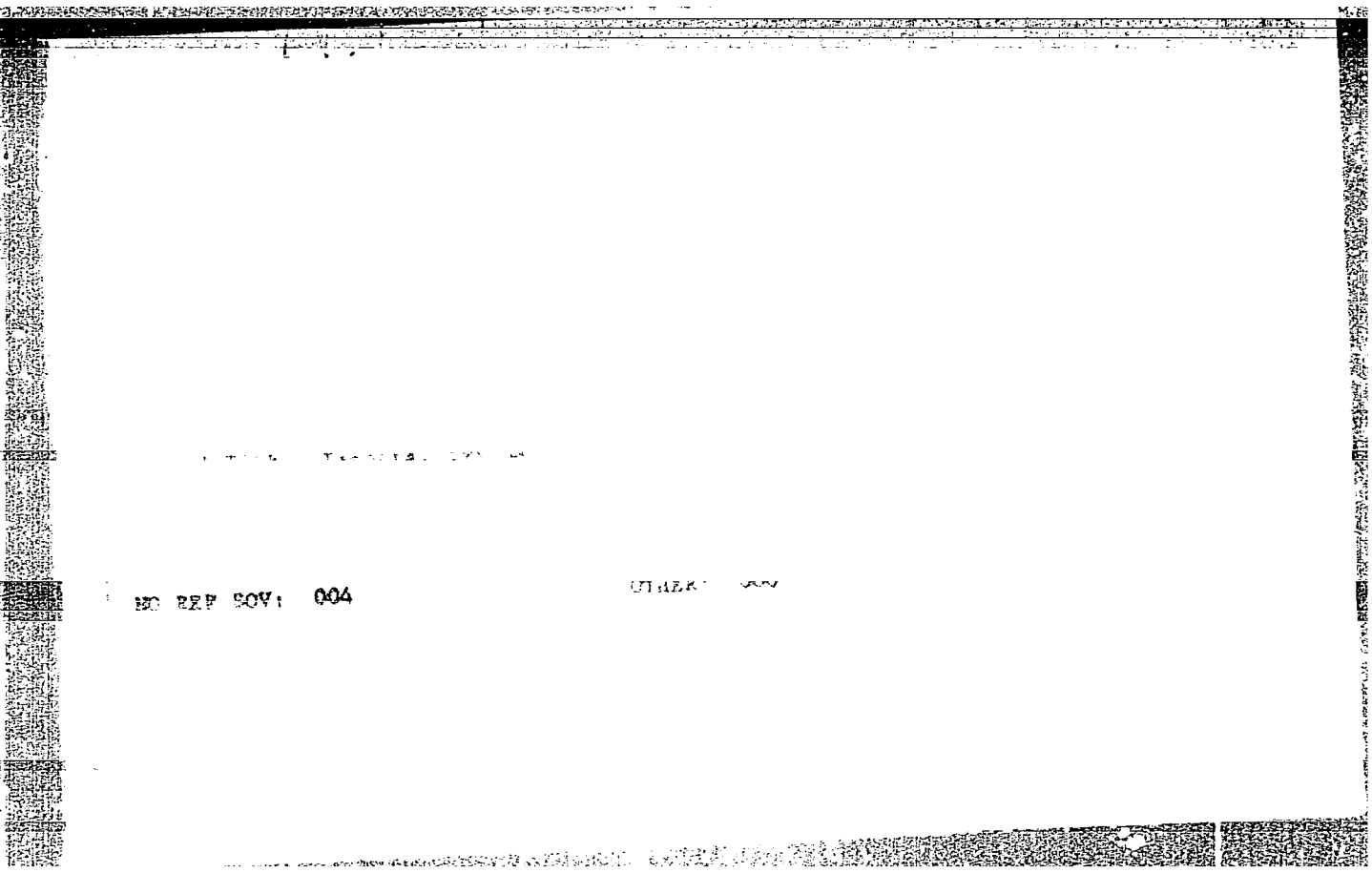
AUTHOR: Vinograd, M. [illegible]

TITLE: A study of the reasons for the lowered plasticity in alloy EI437B at high temperatures

[illegible] Institut chernoy metal-



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859910003-5"



VINOGRAD, M.I.; GROMOVA, G.P.

Effect of inclusions on the plasticity of steel at high temperatures. Sbor. trud. TSNIICHM no.32:5-21 '63. (MIRA 16:12)

ALFEROVA, N.S., doktor tekhn. nauk; BERNSHTEYN, M.L., kand. tekhn. nauk; BLANTER, M.Ye., doktor tekhn. nauk; BOKSHTEYN, S.Z., doktor tekhn.nauk; VINOGRAD, M.I., kand. tekhn.nauk; GAMOV, M.I., inzh.; GELLER, Yu.A., doktor tekhn. nauk; GOTLIB, L.I., kand. tekhn. nauk; GRDINA, Yu.V., doktor tekhn.nauk; GRIGOROVICH, V.K., kand. tekhn. nauk; GULYAYEV, B.B., doktor tekhn. nauk; DOVGALEVSKIY, Ya.M., kand. tekhn. nauk; DUDOVTSEV, P.A., kand. tekhn. nauk [deceased]; KIDIN, I.N., doktor tekhn. nauk; LEYKIN, I.M., kand. tekhn. nauk; LIVSHITS, B.G., doktor tekhn. nauk; LIVSHITS, L.S., kand.tekhn. nauk; L'VOV, M.A., kand. tekhn. nauk; MEYERSON, G.A., doktor tekhn. nauk; MINKEVICH, A.N., kand. tekhn. nauk; NATANSON, A.K., kand. tekhn. nauk; NAKHIMOV, A.M., inzh.; NAKHIMOV, D.M., kand. tekhn. nauk; OSTRIN, G.Ya., inzh.; PANASENKO, F.L., inzh.; SOLODIKHIN, A.G., kand. tekhn.nauk; KHRUSHIN, F.F., kand. tekhn. nauk; CHERNIASHKIN, V.G., kand. tekhn. nauk; YUDIN, A.A., kand. fiz.-mat. nauk; YANKOVSKIY, V.M., kand. tekhn. nauk; RAKHSHTADT, A.G., red.; GORDON, L.M., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

(Continued on next card)

ALFEROVA, N.S.--- (continued) Card 2.

[Metallography and the heat treatment of steel]Metallovedenie i termicheskaia obrabotka stali; spravochnik. Izd.2., perer. i dop. Pod red. M.L.Bernshteina i A.G. Rakhshtadta. Moskva, Metallurgizdat. Vol.2. 1962. 1656 p. (MIRA 15:10)

(Steel--Metallography)
(Steel--Heat treatment)

LIVSHITS, Boris Grigor'yevich; BUNIN, K.P., prof., retsenzent; VINOGRAD, M.I., kand. tekhn. nauk, st. nauchn. sotr., retsenzent; MOLOTILOV, B.V., red.; BERLIN, Ye.N., red. izd-va; KARASEV, A.I., tekhn. red.

[Metallography] Metallografiia. Moskva, Metallurgizdat, 1963. 422 p. (MIRA 16:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut shelkovoy promyshlennosti (for Vinograd).
(Metallography)

S/737/61/000/000/007/010

AUTHORS: Chernyak, G.S., Engineer, Pegova, T.G., Engineer, and Vinograd, M.I., Candidate of Technical Sciences.

TITLE: Formation of nitride inclusions during the heating of CrNi alloys containing Ti and Al.

SOURCE: Stal', sbornik statey. Ed. by A.M.Yampol'skiy. Moscow. 1961, 455-461.

TEXT: Nonmetallic inclusions found in fissures in NiCr-alloy bars and parts were formerly believed to result from casting defects. The present investigation shows that they may form in the course of hot working (forging, rolling, stamping) and in the resulting heating as well. Three alloys were tested: No. 1 with 5% Al only; No.2 and No.3 with 1.0-2.5% Ti and Al each. In No. 1 surface fissures resulting from rolling were investigated; in No.2 internal fissures after forging were studied; in No.3, which was free from fissures, the surface was examined after long-term heating. Fissured No. 1 specimens were heated in ordinary electric compartment kilns (T=700-1,200°C; at 100° intervals; soaking 2 and 10 hours). 2-hour and 10-hour soaking at 700-900° did not affect the microstructure of the fissures, but after 10 hours at 1000° small gray rod-shaped and polygonal inclusions (identified as Al nitrides by polarized-light examination against a dark field) appeared near the fissures, at 1100° their number increased, at 1200° they became noticeably enlarged, at 1260° they assumed a rounded shape. No comparable inclusions were evident away from the fissures. 10-hour soaking at 1100 and 1150° of the No.2

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alloy with forging fissures revealed analogous phenomena with the formation of Ti nitrides and an insignificant amount of Ti carbonitrides. Ni-base alloys with Ti and Al content yielded Ti-nitride inclusions only, but no Al nitrides. This is attributed to the greater affinity of N to Ti than to Al and is consistent with the respective values of the heat of formation of TiN (+80.3± 2.0 cal/mol) and AlN (-60.0± 1.0 cal/mol). In the surface layer of alloy No. 3 fairly large TiN acicular and rectangular crystals form after prolonged soaking at 1290° and up. Oxidation of the surface layer, then, penetrates 0.05 mm; the crystal formation penetrates about 0.1 mm. Thus, nitride inclusions pertain to 2 types: (I) Inclusions formed in liquid metal, having a regular shape and singular or grouped appearance (TiN); (II) Acicular and rectangular (rarely regularly shaped) inclusions formed in fissures and on the surface of heated solid metal, attributable to diffusional introduction of atmospheric N into the metal; these inclusions grow with temperature and soaking time. Inclusions may thus be genetically classified as follows: (a) Absence of inclusions near surface-emergent fissures indicates formation due to hot or cold deformation not followed by extensive heating; (b) presence of inclusions of the second type indicates that fissures were formed previously and were then exposed to heating and reaction with atmospheric N; (c) groups of inclusions of the first type indicate that the parent fissures originated in casting defects. There are 7 figures and 4 Russian-language references (2 Soviet papers and 2 translations of Western books).

ASSOCIATION: Zavod "Elektrostal'" and TsNIIChM (The Elektrostal' Factory and the Central Scientific Research Institute for Ferrous Metals).

POPILOV, Lev Yakovlevich; ZAYTSEVA, Lidiya Pavlovna; VINOGRAD, M.I., doktor tekhn. nauk, retsenzent; SMIRNOVA, A.V., kand. tekhn. nauk, retsenzent; FOMIN, N.V., red.; GORDON, L.M., red.izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Electrolytic polishing and pickling of metallographic sections] Elektropolirovanie i elektrotravlenie metallograficheskikh shlifov. 2., perer. izd. Moskva, Metallurgizdat, 1963. 410 p. (MIRA 16:5)

(Metallography--Equipment and supplies)
(Electrolytic polishing)
(Metals--Pickling)

VINOGRAD, Mariya Ippolitovna; LEBEDEV, A.I., red.; OZERETSKAYA, A.L., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

[Inclusions in steel and its properties] Vkliucheniia v stali i ee svoistva. Moskva, Metallurgizdat, 1963. 252 p. (MIRA 16:4)

(Steel--Inclusions) (Steel--Metallography)

VINOGRAD, M.I.; GROMOVA, G.P.

Changes in the amount and type of inclusions in 1Kh18N9T steel during smelting. Sbor. trud. TSNIICHM no.24:301-307 '62. (MIRA 15:6)

(Chromium-nickel steel--Metallurgy) (Steel--Inclusions)

VINOGRAD, M.I.; GROMOVA, G.P.; RYL'NIKOVA, A.G.; SMIRNOVA, A.V.

Methods of investigating inclusions in smelting baths with varying plasticity at high temperatures. Sbor. trud. TSNIICHM no.24: 261-278 '62. (MIRA 15:6)
(Steel--Inclusions) (Metals at high temperatures)

VINOGRAD, M.I.; ROZENBERG, V.M.; SHAPIRO, M.M.

Modern phase analysis methods of steel and alloys. Sbor. trud. TSNIICHM no.24:191-203 '62. (MIRA 15:6)
(Steel—Metallography) (Alloys—Metallography)
(Phase rule and equilibrium)

S/776/62/000/024/002/007
E111/E135

AUTHORS: Vinograd, M.I., Rozenberg, V.M., and Shapiro, M.M.

TITLE: Modern methods for phase analysis of steel and alloys

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov. no.24, 1962. Novyye metody ispytaniy metallov. 191-203.

TEXT: Phase analysis is important in developing new materials with special properties and in improving existing materials. The authors outline the characteristics of four main groups of methods available: metallographic, X-ray, chemical and electrochemical, physical. As examples of their application to the solution of currently important problems the authors discuss the following: low strength of weld in tubes of type 1Х18Н9Б (1Kh18N9B) steel; formation of sigma-phase in high-silicon steels and alloys, leading to loss of ductility; low plasticity in tensile tests on some heats of type Х25 (Kh25) steel; excessive inclusion content in type 0Х18Н9Т (OKh18N9T) steel; estimation of inclusion content in high-purity steels, e.g. type ШХ15 (ShKh15); failure of steel in hot mechanical deformation.

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In addition, outside the U.S.S.R. electron microscopic investigation of grain boundaries as well as local X-ray spectrum analysis are widely used. Because methods are so numerous and complicated, teams of experts working together are needed. There are 7 figures and 4 tables.

Change in the quantity and nature ...

out by a metallographic method using a magnification of X 360. The work showed that after oxygen lancing of the bath nitride inclusions are absent, appearing again after addition of ferrotitanium. Sulphide inclusions vary little during melting, but decrease greatly after addition of ferrotitanium. The nature of the oxide inclusions changes greatly during melting: the chromites and silicates of iron first formed change into glassy silicates after addition of the deoxidizing mixture; some of these then leave the bath whilst the remaining glasses change into titanium oxides.
There are 6 figures and 1 table.

Card 2/2

VINOGRAD, M.I.; KISELEVA, S.A.; AKIMOVA, Ye.P.; APOLOVNIKOVA, L.G.; SHEVCHENKO, L.N.; KEDRINA, A.M.; KRASNOVA, A.K.

Metallographic method for the determination of nonmetallic inclusions. Standartizatsiia 25 no.11:27-33 N '61. (MIRA 14:11)
(Steel--Analysis)

VINOGRAD, M.I., kand.tekhn.nauk; GONCHARENKO, M.S., inzh. [deceased]; DORONIN, V.M., inzh.; TOPILIN, V.V., inzh.; CHERNINA, B.G., inzh.; Prinimali uchastiye: SHEYN, A.S., kand.tekhn.nauk; GORSKIY, V.N., inzh.; ARKHIPOVA, V.P., inzh.; LAGUNTSOVA, Ye.V., inzh.; KISELEVA, S.A., inzh; RYBAKOVA, V. Ya., inzh.; BYSTRIKOVA, I.N., tekhnik; BURDYUCHKINA, Ye.P., tekhnik; SOLODIKHIN, I.P., tekhnik.

Improving the process of making EI347 steel for bearings. (MIRA 14:5)
Stal' 21 no.6:543-546 Je '61.

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i zavod "Elektrostal'."
(Bearing metals)

33832 S/137/62/000/001/165/237
A006/A101

18.1235

AUTHORS: Chernyak, G. S., Pegova, T. G., Vinograd, M. I.

TITLE: The formation of nitride inclusions during heating chrome-nickel alloys containing titanium and aluminum

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 53, abstract 1I370 (V sb. "Stal'", Moscow, Metallurgizdat, 1961, 455-461)

TEXT: It was established that in alloys with Ti and (or) Al secondary TiN and AlN nitrides may be formed after extended holding (5 - 10 hours at 1,000 - 1,200°C under conditions of a possible contact with atmospheric air. These nitrides are exothermic compounds with high formation heat. The affinity of Al with N is lower and its nitride is not formed in the presence of Ti in the alloy. Nitridic inclusions in the form of fine needles and rectangles were observed near cracks, produced by strong impacts during forging, and also in the surface layer up to 0.1 mm depth (oxidation proceeded merely to 0.05 mm depth) after extended holding at $\geqslant$ 1,290°C. The shape of these nitridic inclusions is very different from isolated rounded nitridic inclusions arising in molten metal.

Ye. Bukhman

[Abstracter's note: Complete translation]

Card 1/1

S/028/61/000/011/003/004
D221/D301

AUTHORS: Vinograd, M.I., Kiseleva, S.A., Akimova, Ye. P., Apolovnikova, L.G., Shevchenko, L.N., Kedrina, A.M., and Krasnova, A.K.

TITLE: The metallographic method of determining non-metallic inclusions

PERIODICAL: Standartizatsiya, no. 11, 1961, 27-33

TEXT: The draft standard: "Steel - The metallographic method of determining inclusions" was prepared by the Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy) and the Ukrainskiy nauchno-issledovatel'skiy trubnyy institut (Ukrainian Scientific Research Institute of Pipes). It includes a scale, covers non-metallic inclusions, and envisages random sampling when the disposition of material is unknown, or from three points along the height of ingots. The project recommends discussion on the quantity of specimens which would ensure the required accuracy.

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The metallographic ...

The suggested scale for evaluating non-metallic inclusions distinguishes three groups: Oxides, globular and sulphides. The scale division is based on the area taken up by the inclusions in one field of viewing, and which increases in a geometrical progression of 2 when passing from one mark to another. In 1959, the UkrNITI developed a special scale for streaky nitride inclusions of titanium in steel rolled sections. The project prescribes a 90 - 110 times magnification. The area taken up by inclusions of mark 3 is equal to that of the same mark scale of (GOST) 80-160. There are tabulated areas of various inclusions and their classification necessitates the separation of silicates into an individual group. They form greatly deformed, plastically deformed and non-deformed inclusions. The project assumes the average mark from the maxima of specimen evaluations of inclusions as a criterion of casting. This is confirmed by statistical analysis. The errors in determining the average mark, and the method of their calculation for some types of inclusions are defined by the project of the standard. There are 2 figures, 5 tables and 9 Soviet-bloc references.

Card 2/2

S/133/61/000/006/013/017
A054/A129

AUTHORS: Vinograd, M. I., Candidate of Technical Sciences, Goncharenko, M.S. (Deceased), Doronin, V. M., Topilin, V. V., Chernina, B. G., Engineers

TITLE: Improving the technology of ЭИ347 (EI347) ball bearing steel

PERIODICAL: Stal', no. 6, 1961, 543-546

TEXT: In the structure of the EI347 type steel used in 1956-57 for the production of rings of 100 mm in diameter produced from steel sections or disks made of 200-300-kg ingots the ledeburite was not sufficiently divided, moreover, the amount of non-metallic inclusions was found to be too high. In order to improve the technology of this steel grade, tests were carried out with the cooperation of Candidate of Technical Sciences A. S. Sheyn, Engineers V. N. Gorskiy, V. P. Arkhipova, Ye. V. Laguntsova, S. A. Kiseleva, V. Ya. Rybakova, Technicians I. N. Bystrikova, Ye. P. Burdyukina, and I. P. Solodikhin. In all tests smelting took place by blowing oxygen through the bath and by bottom casting. The ladles were made of fireclay or mullite, the weight of the ingots was 300, 500 and 750 kg, from which billets 80 x 80 - 90 x 90 mm in size were made.

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S/133/61/000/006/013/017
A054/A129

Improving the technology of ЭИ347 (EI347) ...

The samples cut from strips 10-12 mm thick taken from the billets were heated in a salt bath to 1,220° ± 10°C with 2 min 30 sec. holding time and annealed at 680° - 700°C for 1 hour, then cooled on air. The following six variants were tested (Table 1). Table 2 shows that the steel had the lowest percentage of non-metallic inclusions when the charge consisted of 35-60% high-speed steel scraps, 30-50% ШХ 15 (ShKh15) steel waste, with the addition of 5-10% ferroalloys. In order to assess the effect of the ladle lining on the impurities, variant II was poured in a chamotte ladle, variant V in a mullite ladle and variant VI in a ladle lined with smooth ("planed") mullite. The best results were obtained with the mullite-lined ladle, the worst results with the ladle lined with smooth high-silicon bricks. It was established concerning the temperature that least siliceous and globular inclusions were found in the steel cast at 1,570° - 1,600 °C. The cleanest zone in the 500-kg and 750-kg ingots is that under the riser head, whereas the part containing most impurities was found in the center of the ingot. In order to obtain the required degree of non-uniformity in carbide structure of the steel, 750-kg ingots have to be used for the disks and 500-750-kg ingots for sectional steel 60-80 mm in diameter, while 300-kg ingots must be taken for sections with smaller diameter. In order to remove the surface defects, the ingots had to be cleaned to a depth of 5-8 mm. By applying this new

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Improving the technology of ЭИ347 (EI347) ...

technology for EI347 grade steels, the waste in the finished product was less than 2%. There are 3 figures and 4 tables.

ASSOCIATION: TsNIIChM and zavod "Elektrostal'"(Elektrostal' Plant)

Table 1: Variants of smelting and pouring EI347 grade steel:
Legend: 1 - composition of the charge, %; 2 - scraps of high-speed steel; 3 - steel, ShKh15; 4 - tungster.-steel* ingots, 5 - soft iron; 6 - ferro-alloys; 7 - lining of the ladle***; 8 - number of castings, (ingots) having a weight of, kg:; * Approximate composition: 0.76% C; 0.25% Si; 0.28% Mn; 0.03% S; 0.03% P; 2.4% Cr; 9.55% W; 0.70% V; 0.19% Mo; ** Including 8% of 1Kh13 steel; *** Ш = Sh: chamotte; М = M: mullite;

1 Parameters Показатели	Номер варианта Number of variant I	II	III	IV	V	VI
1 Состав шихты, % отходы сталей:						
2 быстрорежущей . . .	25—30	45—50	10—20	20—25	35—60	35—40
3 ШХ15 . . .	25—30	40—45	40—45	40—45	35—50	35—45
4 вольфрамистые* шихтовые слитки	15—20	—	30—40	—	—	—
5 мягкое железо	15—20	—	—	15—20	—	10—15**
6 ферросплавы	5—10	5—10	5—10	10—15	5—10	10—15
7 Футеровка ковшей*** . . .	Ш	Ш	М	М	М	МС
8 Количество плавок, разлитых на слитки весом, кг:						
300	—	—	—	2	—	—
500	4	1	2	—	3	—
750	4	6	4	8	10	10

Card 3/4

VINOGRAD, M.I.; KISELEVA, S.A.; SMIRNOVA, A.V.; KRASNOVA, A.K.; FAYVILEVICH, G.A.; PAVPEROVA, I.A.; SMIRNOV, Yu.I.

"Metallography laboratory" by E.V.Panchenko and others. Reviewed by M.I.Vinograd and others. Zav.lab. 26 no.1:127-128 '60. (MIRA 13:5)

(Metallography)

VINOGRAD, M. I.

18.9200

77464
SOV/133-60-2-25/30

AUTHORS: Fedorinova, Ye. G., Chernyak, G. S. (Engineers), Svyatnikova, I. N. (Technician), Vinograd, M. I. (Candidate of Technical Sciences)

TITLE: Effect of Ingot Weight on the Susceptibility of 1-2Kh13-Steels to Hairline Cracking

PERIODICAL: Stal', 1960, Nr 2, pp 77-79 (USSR)

ABSTRACT: Stainless steels 1Kh13 and 2Kh13, widely used for steam turbine blades, are highly susceptible to hairline cracking. Earlier studies (see V. Speranskiy and A. Koshik, Stal', 1940, Nr 2, pp 32-38; and M. I. Vinograd, G. S. Chernyak, and N. D. Orekhov, Stal', 1957, Nr 6, pp 560-620) revealed hairline cracks to consist of elongated nonmetallic inclusions. The following methods of minimizing this defect have been suggested: deoxidation of the bath by ground ferrosilicon, use of complex deoxidizers and bottom pouring. At "Elektrostal'" Plant (zavod "Elektrostal'"), V. S. Kultysin and B. N. Popov have been studying ways of improving the

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soundness of 1Kh13 and 2Kh13 steels over a number of years. Their composition is (%): C, $\leq$ 0.15; max Mn, 0.5; max Si, 0.7; Cr, 12.0 to 14.0; same in 2Kh13-steel except C, which is 0.15 to 0.23%. Considerable improvements were achieved by (1) oxygen-enriched blast; (2) more thorough deoxidation; and (3) bottom pouring. The authors investigated 300-, 500-, 700-, 750-, and 1,000-ton ingots. The different-weight ingots were produced from identical melts. Macrosections corresponding to the upper, center, and bottom parts of ingots were taken from 100 x 100 mm billets and studied for over 1 mm long cracks. Nonmetallic inclusions identified according to State Standards (GOST 801-47) on the same samples were found to consist of oxides and semiplastic silicates. Test results showed 500-kg ingots to be least affected by cracks; at the same time, they are least expensive under conditions of "Elektrostal'" Plant. Most susceptible to cracking were 1,000-kg ingots. Susceptibility tests according to height showed 700-,

Card 2/3

750-, and 1,000-kg ingots to be most affected in the bottom part, 500-kg ingots in the center and bottom, and 300-kg ingots in the center. Ingots weighing 500 kg were found to be least affected, particularly, in the upper half. In order to enhance metal soundness the authors recommend: (1) selecting optimal ingot weight; and (2) adhering strictly to the standard optimal melting process. There are 4 tables.

ASSOCIATION: "Elektrostal'" Plant (Zavod "Elektrostal'")

Card 3/3

SOV/133-59-5-22/31

AUTHORS: Vinograd, M.I., Candidate of Technical Sciences and Lyubinskiy, B.E., Engineer

TITLE: The Influence of the Technology of Production on Properties of Alloy Kh25N20 (Vliyaniye tekhnologii izgotovleniya na svoystva splava Kh25N20)

PERIODICAL: Stal', 1959, Nr 5, pp 448 - 451 (USSR)

ABSTRACT: Alloy Kh25N20 is used for electrodes for welding stainless and heat-resisting austenitic steels in order to obtain high-strength and high-corrosion resistance of welded seams. In order to determine the optimum composition and technology of production of this alloy, a series of heats were made in a 50 kg induction furnace with a basic chrome-magnesite lining. For comparison, the metal smelted in a 500 kg induction furnace and a 5-ton basic electric-arc furnace was also tested. The influence of silicon and carbon content of metal, composition of charge and the type of deoxidants were tested. Mechanical tests (impact strength, torsion) were carried out in a temperature range 900 - 1 250 °C. The experimental results are assembled in the table and Figures 1 and 2. It was found that high-

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The Influence of the Technology of Production on Properties of Alloy Kh25N20

temperature plastic properties are practically independent of the content of carbon within a range of 0.06 - 0.25%, and only slightly decrease with increasing silicon content from 0.40 to 1% but can substantially change, depending on the condition of smelting. In order to increase plastic properties of the alloy, the oxidation of silicon in the metal and the appearance of the silicon reduction process should be reluced to a minimum. For this purpose, it is necessary: a) for a rapid melting of the charge; b) that some titanium should be present in the charge (to prevent oxidation of silicon) and slag-forming materials should contain minimall amounts of silica; c) that metallic chromium for alloying should be replaced with scrap of steel Kh28 or ferrochromium and, d) that crucible or furnace lining should be in a good state and contain

The Influence of the Technology of Production on Properties of Alloy Kh25N20

the smallest possible amount of silica.
There are 2 figures, 1 table and 5 references, 3 of which are Soviet and 2 English.

ASSOCIATION: Zavod "Elektrostal'" ("Elektrostal'" Works)

Card 3/3

SOV/137-58-9-19033

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 127 (USSR)

AUTHORS: Vinograd, M.I., Zubrilova, V.A.

TITLE: Prevention of Coarse Granular Fracture in Silchrome Steels (Preduprezhdeniye poyavleniya krupnozernistogo izloma v sil'khromovykh stalyakh)

PERIODICAL: V sb.: Metallovedeniye i termich. obrabotka. Moscow, Metallurgizdat, 1958, pp 31-38

ABSTRACT: A study is made of the effect of degree of reduction, temperature of recrystallization, and the temperature interval during forging upon grain growth in Kh9S2 and Kh10S2M steels. The experiments were run with ground rods. Rods 10 mm in diameter of Kh9S2 steel were sized with reductions of 4 to 22.9% and subsequent recrystallizing anneal at 700, 750, 800, and 850°C. Anneal at 850° was chosen, since at that temperature the degree of pre-deformation is most clearly revealed. It is established that in order to prevent formation of coarse and non-uniform grain in these steels, a high temperature has to be maintained at the end of rolling ($\geq$ 900°) and small reductions should be applied in drawing, namely, up to 9% for Kh9S2

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SOV/137-58-9-19033

Prevention of Coarse Granular Fracture in Silchrome Steels

steel and ≤12% for Kh10S2M steel. Reductions exceeding 20% result in fine granular structure but produce a considerable amount of rejects due to cracks. Performance of a special sizing operation with changed tolerances made it possible to draw grades Kh9S2 and Kh10S2M steels at less critical reductions.

F.U.

1. Steel--Fracture 2. Grains (Metallurgy)--Control 3. Heat treatment--Applications
4. Rolling mills--Performance

Card 2/2

SOV/133-58-10-25/31

AUTHORS: Chernyak, G.S., Engineer and Vinograd, M.I., Candidate of Technical Sciences

TITLE: On the Problem of Control of Metal for Hair Cracks in Billets and Finished Products (K voprosu o kontrole metalla na volosoviny v zagotovkakh i gotovykh detalyakh)

PERIODICAL: Stal', 1958, Nr 10, pp 946 - 947 (USSR)

ABSTRACT: These are remarks on the previously published paper by Z.M. Kalinina (Stal', 1957, Nr 3). The present authors consider that the conclusions reached in the original paper (lack of correlation between the results of the control of 3 specimens from a given heat for hair cracks and the results of control of finished products) are incorrect. As the standard method of testing 3 specimens is inconclusive, a larger number of specimens should be tested using a magnetic defectoscope. There are 4 Soviet references.

Card1/1

AUTHOR: Vinogrid, M. I., Candidate of Technical Sciences, 32-10-20/32
Leader of a Working-Team in the Central Laboratory of the "Elektrostal" Plant

TITLE: Comments

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1220-1220 (USSR)

ABSTRACT: In her report delivered on the occasion of the 40th anniversary of the October revolution, the leader of the working-team stated that the laboratory in which she works, experienced a tremendous technical-scientific advance, during Soviet rule, specially since 1929, when a new building was attached to the works-laboratory. The steadily increasing requirements of political economy with respect to new sorts of steel and alloys caused a greater number of important problems to be solved by the laboratory which were successfully solved in the courseof time. The great responsible work to be performed by the personnel of the works with respect to the elaboration of technological processes of refractories and other alloys with special properties, led to the application of precise methods of production and their control which are transferred by tradition from older workmen to the young generation. At last, the mentioned works-laboratory was equipped with the most modern outfits, installations, controlling devices among which are an electron mi-

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Comments

32-10-20/32

croscope, appliances for gas analysis, X-ray structure analysis, defectoscopy of ultrasonics and magneto-defectoscopy. Under the supervision of scientists and specialists of the work-laboratory: a great number of special sorts of steel and special alloys was developed in the works and their manufacture was initiated. Always new technological methods are successfully applied in the works, as e.g. the use of oxygen, the vacuum melting process, vacuum casting processes and others. All Conditions are given existing make it possible that the works laboratory will successfully develop its activity also in future.

ASSOCIATION: Tsentral'naya laboratoriya zavoda "Elektrostal'" (Central Laboratory of the "Elektrostal'" Plant)

AVAILABLE: Library of Congress

1. Science-USSR-Progress

Card 2 /2

130-58-2-7/21

AUTHORS: Vinograd, M.I., Candidate of Technical Sciences, Lyubinskaya, M.A., Orekhov, M.D., Engineers

TITLE: Effect of Cast Refractories on Impurity Content in Ball Bearing Steel (Vliyaniye razlivochnykh ogneuporov na zagryaznennost' sharikopodshipnikovoy stali)

PERIODICAL: Metallurg, 1958, Nr 2, pp 12 - 15 (USSR)

ABSTRACT: The authors describe experiments at the "Elektrostal'" Works jointly with the Moskovskiy institut stali (Moscow Steel Institute) and Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov (All-Union Refractories Research Institute) on the sources of impurities in ball-bearing steel, their aim being to find the best refractories for the ladle, runner and for bottom-pouring. Engineers V.S. Nikol'skiy and V.S. Laktionov and a representative of Gisogneupor, S.D. Skorokhod, participated in the work. Test refractories (properties shown in Table 1 for ladle and runners and in Table 3 for bottom pouring) were made from mixes containing Ca^{45} to give 150 millicuries per ton of mix. The steel was melted in 20-ton electric-arc furnaces and bottom-poured into 500-kg ingots. These were rolled and specimens were cut from the product and measured for radio-activity either by the GOST 801-47 scale or by isolating the inclusions

Card1/2

Effect of Cast Refractories on Impurity Content in Ball Bearing Steel

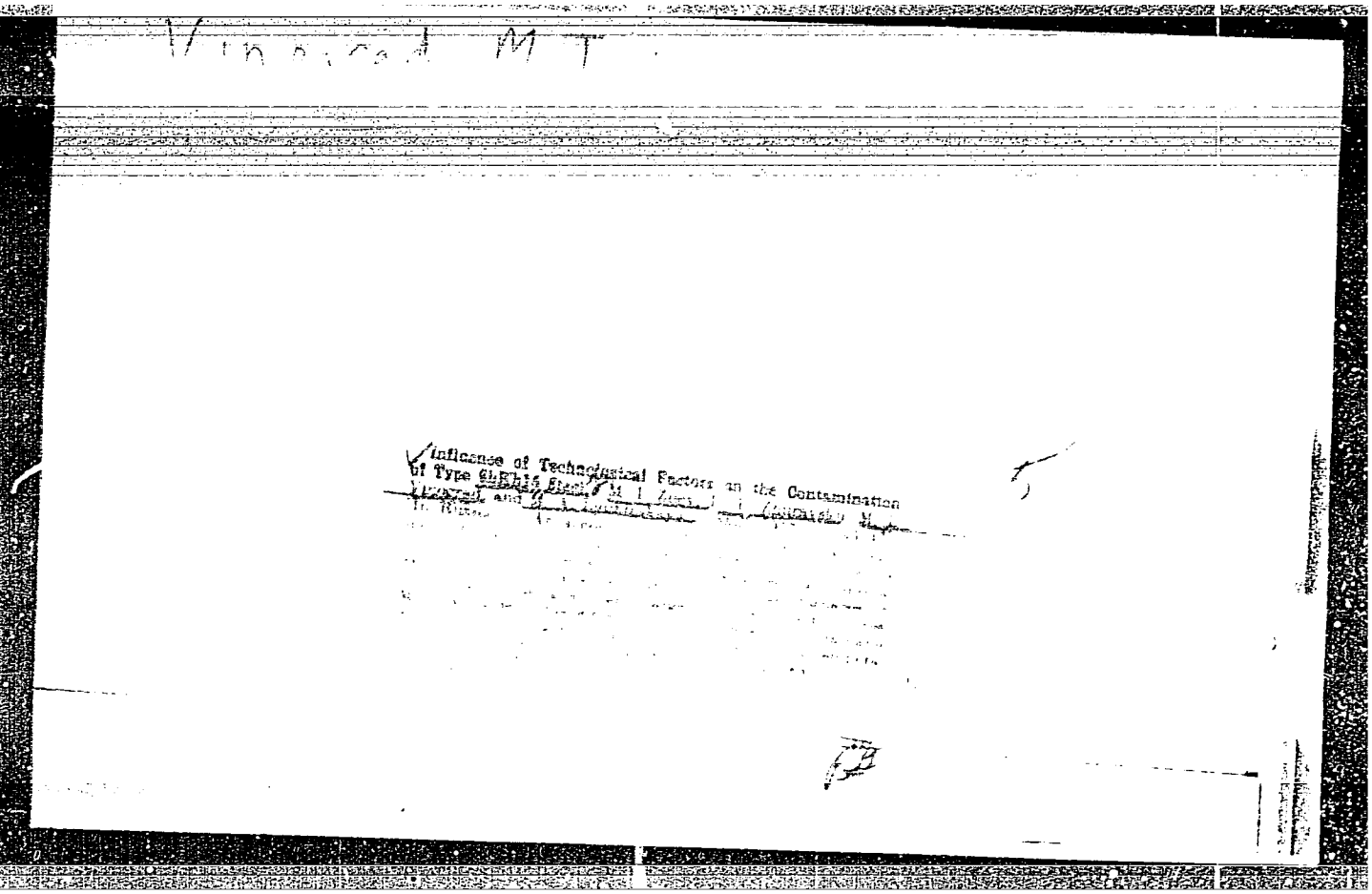
electrolytically. The results for ladle and runner refractories show (Table 2) that of the three types tested (fireclay, kaolin and high-alumina) the high-alumina (72 - 75% Al_2O_3, 5.6% porosity) was best. The extent of contamination was found to rise with metal temperature. For bottom-pouring refractories, little difference was observed (Table 5) between the types tested; fireclay, graphite-fireclay, kaolin, high-alumina. There are 5 tables.

ASSOCIATION: Zavod "Elektrostal'" ("Elektrostal'" Works)

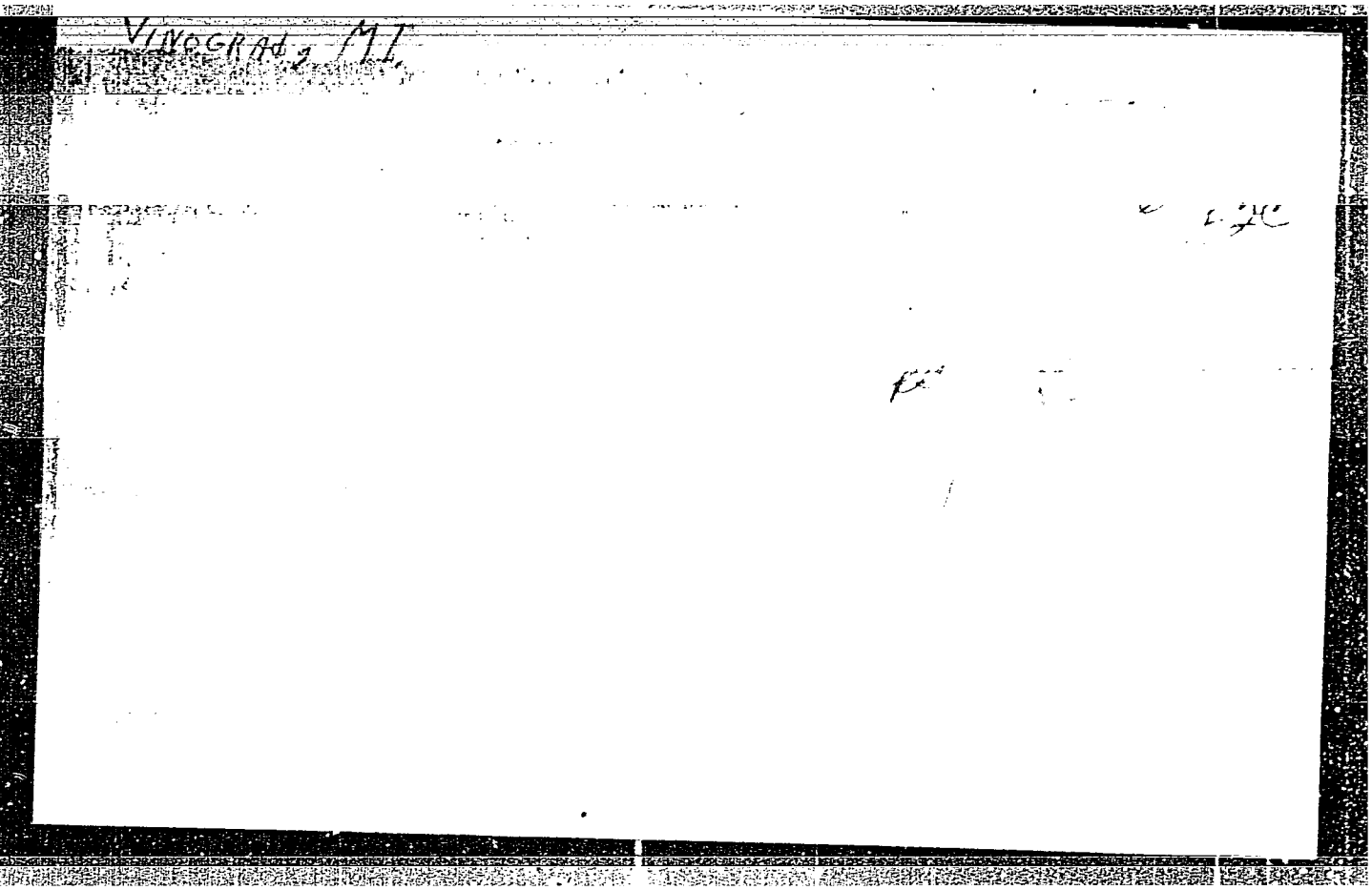
AVAILABLE: Library of Congress

Card 2/2

1. Steel-Impurities 2. Ball bearings--Production



Influence of Technological Factors on the Contamination



VINOGRAD, M.I., kand.tekhn.nauk.

Our achievements and tasks. Zav.lab. 23 no.10:1220 '57.
(MIRA 10:12)

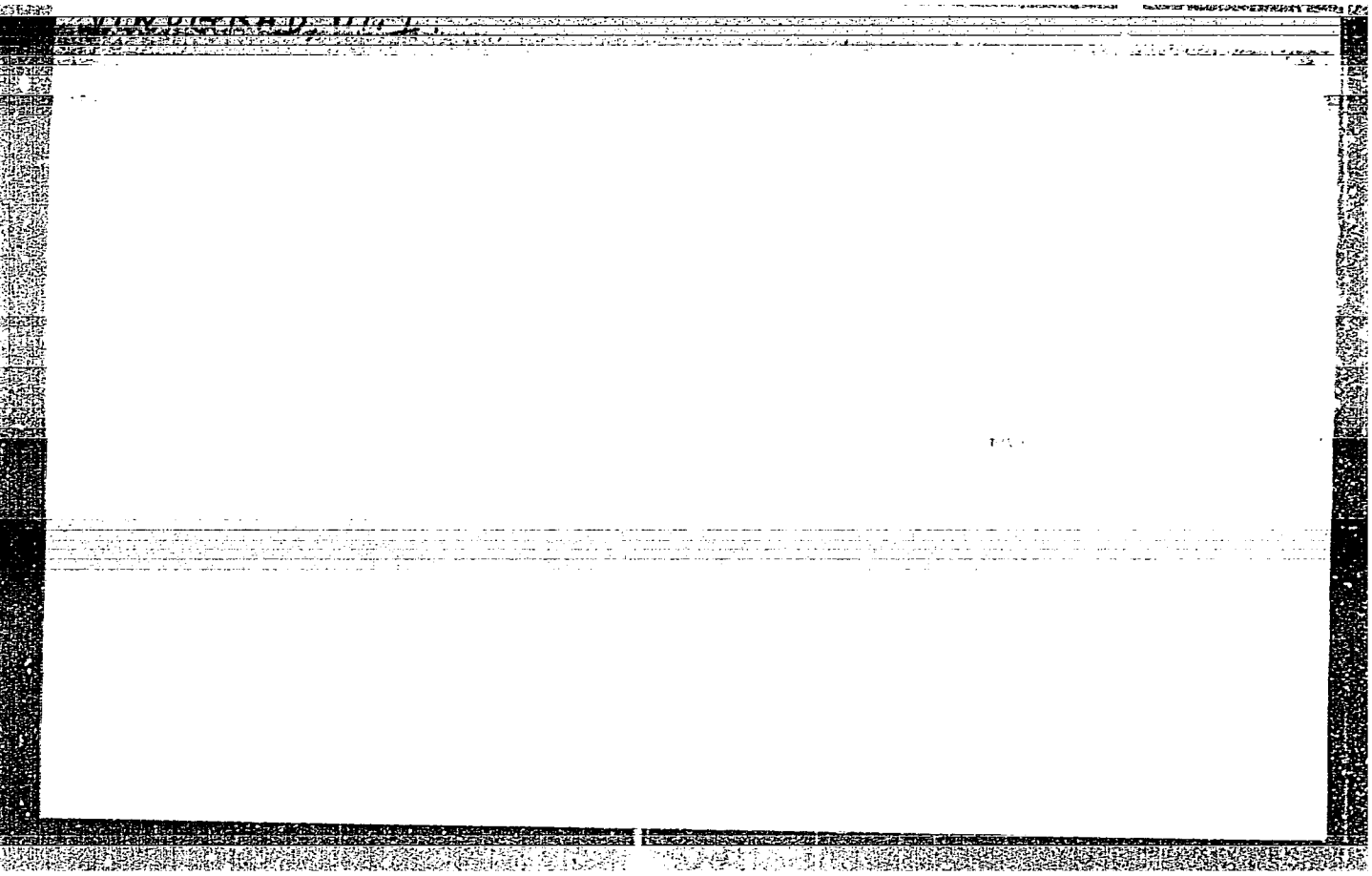
1.Rukovoditel' gruppy TSentral'noy laboratorii zavoda "Elektrostal'."
(Metallography)

VINOGRAD, M.I.

KULTYGIN, V.S., inzhener; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; LYUBIMSKAYA, M.A., inzhener.

Effect of the conditions of heat treatment on the magnetic properties of EKh3 steel. Stal' 16 no.12:1137-1138 D '56. (MLRA 10:9)

1. Zavod "Elektrostal'."
(Steel--Heat treatment) (Steel--Magnetic properties)



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VINOGRAD, M.I

AUTHORS: Vinograd, M.I. (Cand.Tech.Sc.), Chernyak, G.S. and Orekhov, N.D. (Engineers). 133-6-25/33

TITLE: The influence of technological factors of smelting and teeming of steel 1-2Kh13 on the degree to which it is affected by hair cracks. (Vliyaniye tekhnologicheskikh faktorov vyplavki i razlivki stali 1-2Kh13 na porazhennost' yeye volosovinami).

PERIODICAL: "Stal'" (Steel), 1957, No.6, pp.560-562 (USSR).

ABSTRACT: The influence of the following factors on the degree to which steel 1-2Kh13 is affected by hair cracks was investigated: a) duration of refining; b) the temperature of metal in the ladle after tapping; c) duration and method of teeming ingot moulds (bottom or top), d) the content of FeO in the tapping slag; e) the position of ingots (first and last ingots were compared); f) the position from which specimens were taken (head, middle and tail parts). Steel making practice (in 20 ton basic electric furnaces) is described. Two ingots from each heat (first and last and second and last for top poured) were tested. After rolling into square bars (90 x 90 mm) 3 templets 60-80 mm long corresponding to head, middle and tail parts of ingots were taken, cut and planed until the plane passed

Card 1/3

The influence of technological factors of smelting and teeming of steel 1-2Kl3 on the degree to which it is affected by hair cracks. (Cont.) 133-6-25/33

through the centre parallel to the direction of the grain. The flat surface was polished and the degree of development of hair cracks was estimated visually. This was evaluated as the relative proportion of specimens with hair cracks 1 mm and over 1 mm long (A%) or as the total length of hair cracks of 2 mm long and over (B%). Hair cracks shorter than 1 mm were not considered. The polishing of specimens and subsequent evaluation of hair cracks was repeated 4 times so that each heat was characterised by 24 estimations. For the control of metal a magnetic defectoscope (on specimens after hardening and annealing) was used in all cases except for the determination of the influence of the method of casting which was done visually on annealed specimens. The results obtained (Table) were statistically examined. It was established that the method of casting and the position of specimen along the height of the ingot have a substantial influence on the degree to which the metal was affected by hair cracks; the temperature of the metal in the ladle after tapping had a small effect. Variations in the remaining factors

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The influence of technological factors of smelting and teeming of steel 1-2X13 on the degree to which it is affected by hair cracks. (Cont.) 133-6-25/33

investigated (within the limits of the practice used) had no influence on the development of hair cracks. In order to decrease the development of hair cracks, bottom pouring of a comparatively hot metal (1550-1650 C) should be used, moreover, important parts should be made from bars corresponding to the head part of ingots.

There is 1 table and 2 references, both Slavic.

ASSOCIATION: "Elektrostal'" Works. (Zavod "Elektrostal'").

AVAILABLE: Library of Congress

Card 3/3

VINOGRAD, M. I.

... may have no effect ...

Properties of 20 KhGR steel. N. I. Leichford. *Stal'* 17, 654(1957).—This steel, contg. C 0.17-0.24, Si 0.17-0.37, Mn 0.7-1.0, Cr 0.1 ... P ... 0.005% ...

VINOGRAD, M. I.

VINOGRAD, M. I. -- "Nonmetallic Impurities in Ball Bearing Steel." Sub 25 Dec 52, Moscow Order of Labor Red Banner Inst of Stell imeni I.V. Stalin. (Dissertation for the Degree of Candidate in Technical Sciences.)

SO: VECHERNAYA MOSKVA, January-December 1952

AUTHOR: Vinograd, M. I. 130-5-7/22

TITLE: Optimal chemical composition of Type 1Х18Н9Т Steel. (Optimal'nyy khimicheskiy sostav nerzhaveyushchey stali 1Х18Н9Т).

PERIODICAL: "Metallurg" (Metallurgist) 1957, No.5, pp.13-16 (USSR).

ABSTRACT: If sufficient titanium is present in a stainless steel to combine with all the carbon, inter-crystallite corrosion will not take place. In the article, the optimal chemical composition of Type 1Х18Н9Т steel (composition recommended in ГОСТ 5632-51: 0.12% C, 0.80% Si, 2.00% Mn, all maximal, 17.0 - 20% Cr, 8-11% Ni, from 5 (C - 0.03) to 0.8% Ti, C being % carbon) is discussed with special reference to titanium. In practice the lower limit for Ti is 5(C - 0.02)% + 0.5% or + 0.10%, depending on the intended use of the steel. Excess of titanium is avoided since it lowers plasticity by affecting the α-phase. Chromium, nickel and titanium affect the α-phase grain size and this is shown by tabulation (including data on inter-crystallite corrosion) and graphical presentation of grain-size determinations for large numbers of heats. From these results the ГОСТ values for carbon, silicon and

Card 1/2

Optimal chemical composition of Type 1X18H9T Steel. (Cont.)

130-5-7/22

manganese are confirmed, but contents of the other elements recommended are: for tube billets 17.0 - 8.0% Cr, 10.0-11.0% Ni, from 5(C - 0.03) + 0.05 to 5(C - 0.03) + 0.15% Ti; for sheet billets 17.0-18.0% Cr, 9.0-11.0% Ni from 5(C - 0.03) + 0.05 to 5(C-0.03) + 0.20% Ti. Strict process control is required to secure compositions within these limits, but steel with excess titanium can still be used for sections if precautions are taken in rolling. There are 4 tables, 2 figures.

ASSOCIATION: 'Elektrostal" Works (Elektrostal').

AVAILABLE:

Card 2/2

VINOGRAD, M.I.

ZUYEV, M.I.; ZHURAVSKIY, D.P.; VINOGRAD, M.I.; LYUBINSKAYA, M.A.

Effect of technological factors on impurities in ShKh15 steel. Stal' 17 no.1:43-47 Ja '57. (MLRA 10:3)

1. Zavod "Elektrostal'".
(Smelting) (Steel--Defects)

AUTHOR: VINOGRAD, M.I., cand.tech.sc. PA - 2420

TITLE: The Reasons for Variations of Steel Ductility at High Temperatures. (Prichiny kolebaniy plastichnosti stali pri vysokikh temperaturakh, Russian)

PERIODICAL: Stal', 1957, Vol 17, Nr 3, pp 254-260 (U.S.S.R.)
Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: Some factors are investigated which determine the plasticity of a metal which has no two-phase structure. The experiment was carried out with the alloy Kh20N80 which was produced in a highfrequency furnace (in crucibles with different linings, both acidous and basic) at various temperatures and under different conditions for deoxidation. One of the most essential reasons for the inferior plasticity of individual smeltings at high temperatures is the presence of oxygen, namely in those cases where it forms vitreous phases and other easily meltable oxides. The formation of SiO during the melting process can be regarded as one of the factors which promote the formation of such inclusions in metal. It has the property of dissolving in liquid metal and it forms easily meltable vitreous phases in a rather dispersive form on the occasion of crystallization (possibly also in form of a thin film). These thin films could not be determined immediately by means of the usual methods and therefore the existence of this film must be regarded

The Reasons for Variations of Steel Ductility at High Temperatures.

as a hypothesis which demands further confirmation. Besides, it is necessary precisely to determine temperature conditions under which SiO and other oxides which have similar properties, are formed.
(3 Tables, 4 Illustrations, and 4 Citations from Slav Publications).

ASSOCIATION: "Elektrostal' "-Works (Zavod "Elektrostal' ")
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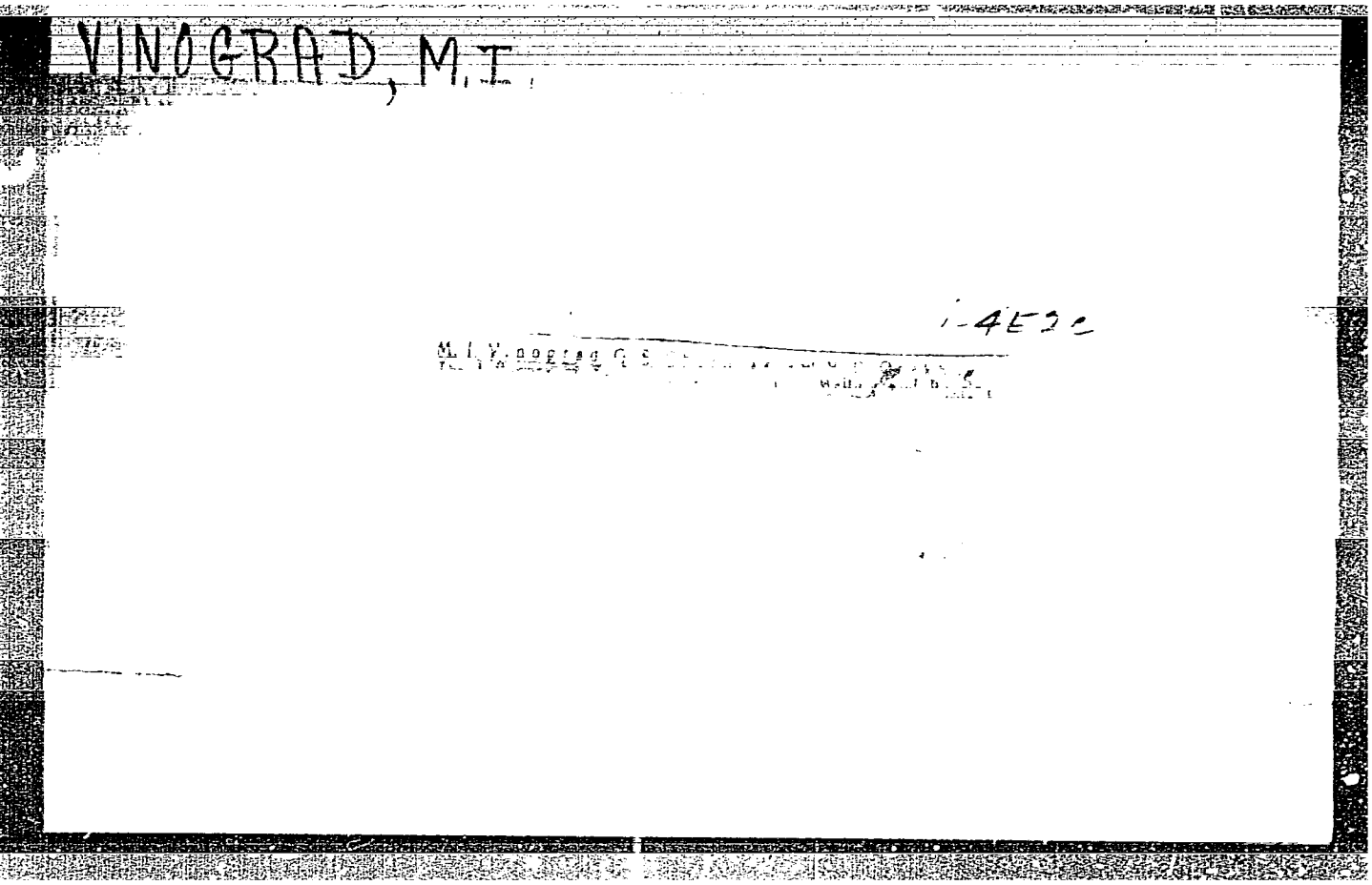
SUBMITTED:
AVAILABLE: Library of Congress



VINOGRAD, M.I.

Influence of technological factors on dirtiness of [illegible]

VINOGRAD, M.I.

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; BLANTER, M.Ye., doktor tekhnicheskikh nauk; BOKSHTEYN, S.Z., doktor tekhnicheskikh nauk; BOLKHOVITINOVA, Ye.N., kandidat tekhnicheskikh nauk; BORZDYKA, A.M., doktor tekhnicheskikh nauk; BUNIN, K.P., doktor tekhnicheskikh nauk; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; VOLOVIK, B.Ye., doktor tekhnicheskikh nauk [deceased]; GAMOV, M.I., inzhener; GELLER, Yu.A., doktor tekhnicheskikh nauk; GORELIK, S.S., kandidat tekhnicheskikh nauk; GOL'DENBERG, A.A., kandidat tekhnicheskikh nauk; GOTLIB, L.I., kandidat tekhnicheskikh nauk; GRIGOROVICH, V.K., kandidat tekhnicheskikh nauk; GULYAYEV, B.B., doktor tekhnicheskikh nauk; DOVGALEVSKIY, Ya.M, kandidat tekhnicheskikh nauk; DUDOVTSEV, P.A., kandidat tekhnicheskikh nauk; KIDIN, I.N., doktor tekhnicheskikh nauk; KIPNIS, S.Kh., inzhener; KORITSKIY, V.G., kandidat tekhnicheskikh nauk; LANDA, A.P., doktor tekhnicheskikh nauk; LEYKIN, I.M., kandidat tekhnicheskikh nauk; LIVSHITS, L.S., kandidat tekhnicheskikh nauk; L'VOV, M.A., kandidat tekhnicheskikh nauk; MALYSHEV,K.A., kandidat tekhnicheskikh nauk; MEYERSON, G.A., doktor tekhnicheskikh nauk; MINKEVICH, A.N., kandidat tekhnicheskikh nauk; MOROZ, L.S., doktor tekhnicheskikh nauk; NATANSON, A.K., kandidat tekhnicheskikh nauk; NAKHIMOV, A.M., inzhener; NAKHIMOV, D.M., kandidat tekhnicheskikh nauk; POGODIN-ALEKSEYEV, G.I., doktor tekhnicheskikh nauk; POPOVA, N.M., kandidat tekhnicheskikh nauk; POPOV, A.A., kandidat tekhnicheskikh nauk; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; ROGEL'BERG, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

AL'TGAUZEN, O.N.----- (continued) Card 2.

SADOVSKIY, V.D., doktor tekhnicheskikh nauk; SALTYKOV, S.A., inzhener; SOBOLEV, N.D., kandidat tekhnicheskikh nauk; SOLODIKHIN, A.G., kandidat tekhnicheskikh nauk; UMANSKIY, Ya.S., kandidat tekhnicheskikh nauk; UTEVSKIY, L.M., kandidat tekhnicheskikh nauk; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk; KHIMYSHIN, F.F., kandidat tekhnicheskikh nauk; KHRUSHCHEV, M.M., doktor tekhnicheskikh nauk; CHERNASHKIN, V.G., kandidat tekhnicheskikh nauk; SHAPIRO, M.M., inzhener; SHKOL'NIK, L.M., kandidat tekhnicheskikh nauk; SHRAYBER, D.S., kandidat tekhnicheskikh nauk; SHCHAPOV, N.P., doktor tekhnicheskikh nauk; GUDTSOV , N.T., akademik, redaktor; GORODIN, A.M. redaktor izdatel'stva; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaia obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshtadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)
(Steel--Heat treatment) (Iron--Heat treatment)
(Physical metallurgy)

VINOGRAD, M.I.; KAPLAN, A.S.; TERENT'YEV, Ye.A.

Methods for determining nonmetallic inclusions in steel. Standartizatsiia 24 no.8:26-30 Ag '60. (MIRA 13:9)
(Steel--Testing)